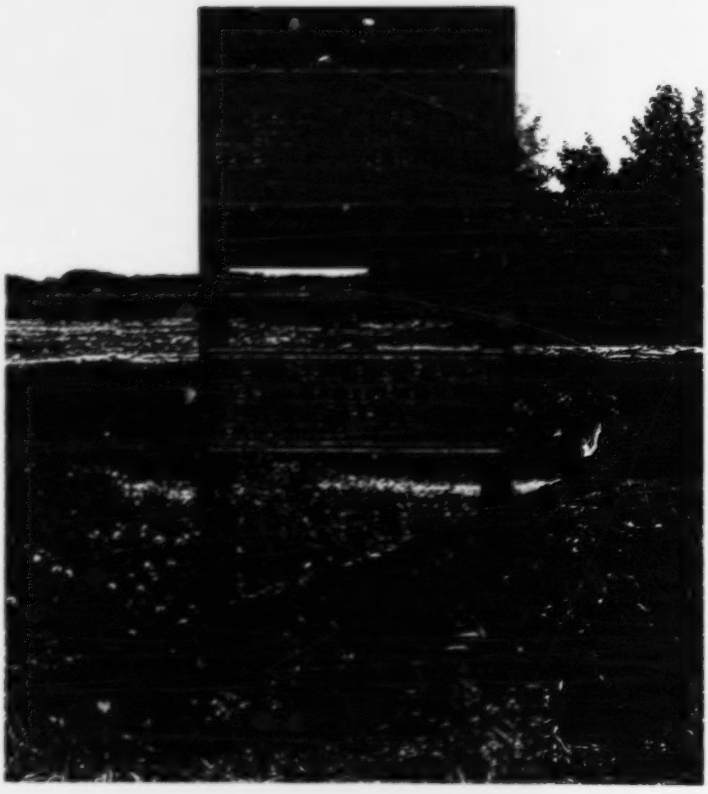
Canada

Saskatchewan

New Pasture and Grazing Technologies Project

# PROJECT SUMMARY



Saskatchewan Agriculture Development Fund

ADF

# Project Summary

# New Pasture and Grazing Technologies Project

Prepared by: New Pasture and Grazing Technologies Project

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# Acknowledgements

The New Pasture and Grazing Technologies Project gratefully acknowledges funding from the Agriculture Development Fund.

The Project also wishes to thank all participants. Without their contributions the Project's goals could not have been achieved.

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# New Pasture and Grazing Technologies Project Summary

## Introduction

Saskatchewan has over 22 million acres of range and pastureland. This supports over 2 million head of livestock, varied wildlife populations and serves as valuable watersheds.

The New Pasture and Grazing Technologies Project, funded by the Economic Regional Development Agreement (ERDA) and the Agriculture Development Fund (ADF), carried out educational and demonstration projects on managing range and pastureland in the province over a three year period.

Saskatchewan Rural Development, Lands provided management expertise while a six member committee of; Jim Hampson of Cut Knife, Lynn Grant of Val Marie, Angus McDougald of Maple Creek, Alan Anderson of Paradise Hill, Dr. Robert Lodge and Wilf Pyle of Lands provided producer advice. The Project had five Rangeland Co-ordinators to provide regional program delivery to areas surrounding Yorkton, Swift Current, North Battleford, and Saskatoon.

The goal was, raise public awareness about native grass and grass management. This was done through range management extension services, producer demonstrations of new range management ideas, and field research.

## Extension Services

The New Pasture and Grazing Technologies Project provided extension services dedicated to Saskatchewan range management issues.

Producers were given access to the latest information on all facets of range and pasture management. Rangeland Co-ordinators held producer demonstration tours, seminars, plant identification and range management field days as part of summer extension programs during 1987-1989. During each year over 30 field days and special events were held at various locations across the province.

Regional range management libraries were developed and range plant collections established.

The Project held a very successful two day "Grazing Management" symposium in January of 1989. Two hundred and seventy producers and professionals attended. Guest speakers Dr. Brian Sindelar, Dr. Paul Gessaman and Dr. Jim Romo spoke on "The Myths in Grazing Management", "Goal Directed Management of Grazing andLivestock Production", and "Ecological Effects of Grazing", respectively. In addition, producers and researchers shared their experiences through two panel discussions. Symposium proceedings are available from the Project upon request.

During the summer of 1989, four Rangeland Planning Workshops were conducted in co-operation with the Saskatchewan Research Council. In December 1989, a four day "Grazing Management School" sponsored with the Extension Division of the University of Saskatchewan attracted 57 participants .

Throughout the project extensive use was made of the media. Regular submissions were produced for ADF News, Farm Report and the Lands Newsletter. Newspaper articles were developed for all Project sites and placed in local papers. Major stories were carried by the Country Guide, the Western Producer, Saskatchewan Farm Life, and Grain News. Radio and television stations proved helpful in promoting Project events.

Videos on "Rangeland Planning", "Pasture Rejuvenation", and "Attentive Grazing Management" were produced for distribution.

In addition, a series of range management publications were produced for distribution. These are titled: "Managing Saskatchewan Rangeland"; "Intensive Grazing on Saskatchewan Rangeland" and "A Guide To Planning For Management and Improvement of Saskatchewan Rangeland".

## Producer Demonstrations

With producer co-operation, 35 demonstration sites were established throughout the agricultural portion of the province reflecting regional needs and practical approaches to range management.

Demonstrations emphasized management through use of planned, complementary and annual grazing systems. Tame pasture rejuvenation and control of problem range weeds also received attention.

Co-operators provided information on livestock performance, grazing days, pasture productivity, rainfall, management concerns, economics and other relevant demonstration data. They also participated in project field days, seminars and media interviews.

The following are general findings and co-operator observations from demonstration sites. The information was obtained over periods ranging from 1 to 4 years. Since these were demonstrations and not research projects, results are not necessarily valid for other operations.

# Southwest Region

## Pasture Under Intensive Grazing Management

Co-operator: DOUG CAMERON
Box 880, SWIFT CURRENT, Sask. S9H 4Y7
Tel: 773-7150

Location: part of SEC 29&30-16-12-W3

Soil: Fox Valley clay loam

Objective: To implement a grazing system that best uses low quality land.

### History:

In 1988 the producer developed approximately 180 acres of native grass and annual pasture for implementation of an intensive rotational grazing program. The system contained the following:

Pasture 1a - 40 acres containing areas excavated for gravel and old alfalfa stand;
Pasture 1b - native vegetation, with parts previously excavated;
Pasture 1c - 10 acres of native;
Field 2 - seeded to fall rye fall of 1987, harvested summer of 1988, then grazed;
Pasture 3 - low lying with some salinity encroachment;
Field 3 - fall rye;
Pasture 4a -native;
Pasture 4b - native.

### Results:

Starting May 9, 1988 15 heifers, a two year old and seven cow/calf pairs entered the pasture. A bull was added June 19 and removed August 22. An additional 11 grassers were added to the herd on September 22.

The producer sold one cow and the 11 grassers on October 20. Seven cows continued grazing until November 5. The heifers grazed until December 14 before being put on winter feed.

During 1989, 35 head (20 cows and 15 calves) were rotated between four pasture areas, utilizing fall rye as a fifth pasture. Grazing began May 3 and ended December 5. Calves were estimated to gain 2.0 lbs/day.

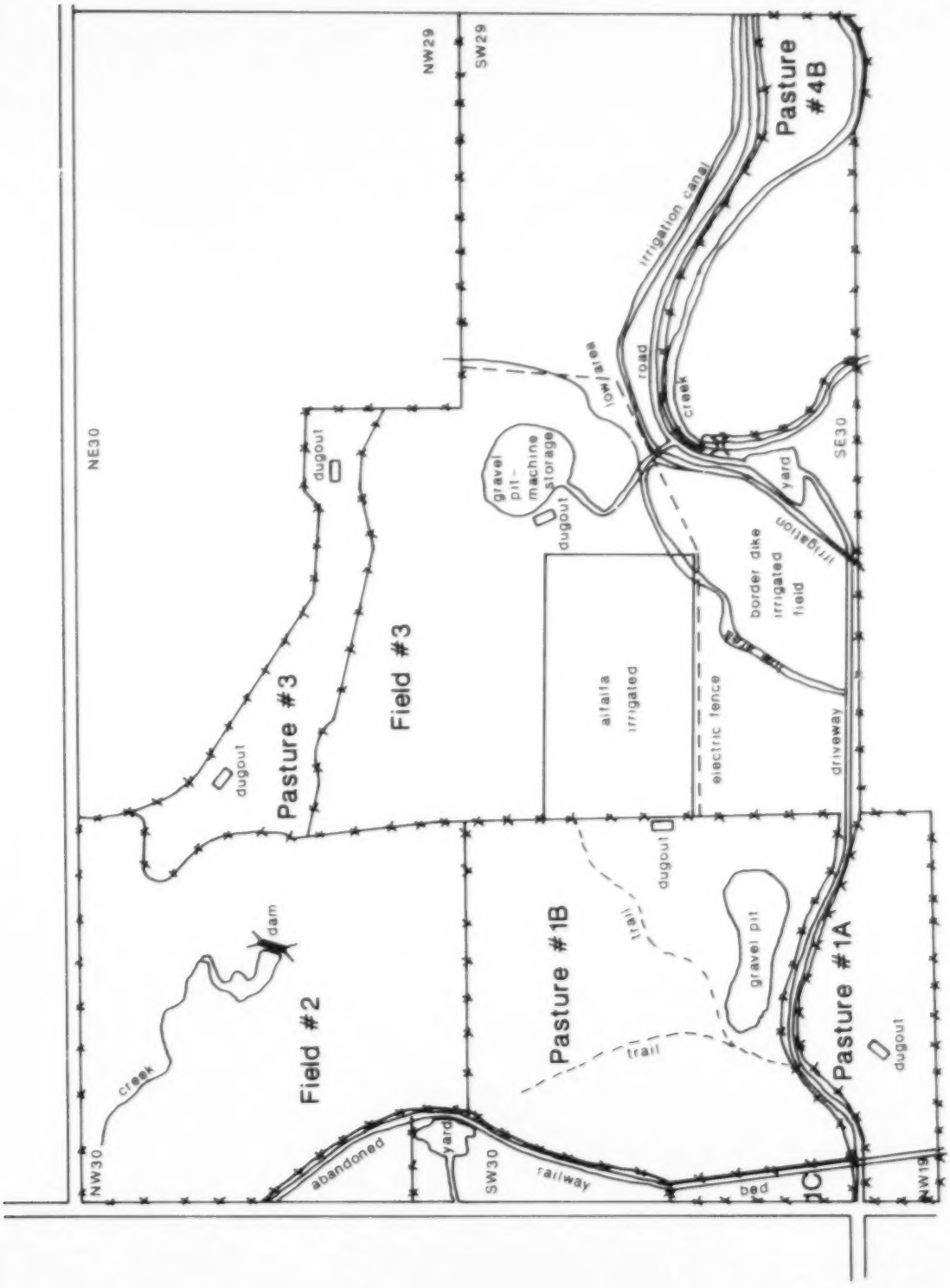
### Observations:

Electric fence worked well on this project and animals were easy to move despite the patchwork pasture layout.

The producer obtained utilization of some relatively unproductive land through rotational grazing.

The co-operator can supply animal weights, rainfall or an assessment of pasture productivity for 1988.

## Doug Cameron's Grazing Cell



# Use of Fall Rye and Russian Wildrye Under Time-Controlled Grazing

Co-operator: RAYMOND and ROBERT PREFONTAINE
Box 32 LISIEX, S0H 2R0
Telephone: 476-2706

Location: SEC 11-4-1-W2

Soil: Wood Mountain loam (cobbles)

Objectives: To increase production while improving forage utilization.

## History:

This 8,000 acre ranch supports a cowcalf-to-finish operation of 360 Red Angus/Simmental back-cross cows. The operation consists of 1500 acres tame pasture and hayland, 1000 acres under cultivation (prior to being seeded back to various tame grass species) and 5500 acres native range.

The demonstration consisted of 350 acres Russian wildrye (RWR), 400 acres fall rye and 50 acres of native range (steep hills and valleys) for a total of 800 acres.

A complementary grazing system using fall rye and Russian wildrye had been in place for several years. The Prefontaines were finding that livestock distribution and forage utilization was uneven.

In 1988 a time-controlled grazing system was implemented in an effort to gain better overall utilization and provide more plant recovery time. A cell, designed with a central watering point; four approximately equal sized paddocks of fall rye and three equal size paddocks of RWR, was established.

## Results:

Grazing Information:

| | 1988 | | 1989 | |
|---|---|---|---|---|
| | **Fall Rye** | **RWR** | **Fall Rye** | **RWR** |
| grazing days | 7,223 | 10,615 | 4686 | 9771 |
| hayed baled | — | — | 75 tons | — |
| acres | 400 | 350 | 400 | 350 |
| stocking rate (AUM/ac) | 0.61 | 1.0 | 0.4 | 0.77 |
| precipitation (mm) | 117 | | 124 | |

## Costs:

| | |
|---|---|
| Total man-days | 22.5 |
| Well development costs | $8,078.85 |
| Electric fencing supplies | $1,446.30 |
| TOTAL | $9,525.15 |

## Observations:

Severe drought conditions of 1988 and extensive winter kill of the fall rye during the 1988-89 winter seriously limited the forage produced.

The grazing days and amount of forages harvested were less than originally projected.

Although results with fall rye were less than anticipated, the Prefontaines are convinced that it is one of the best forages for a short-term grazing program.

The project's ability to keep cattle off native range until late June in 1988 and 1989 was the most beneficial result. Although not immediately apparent, this should help improve native range condition.

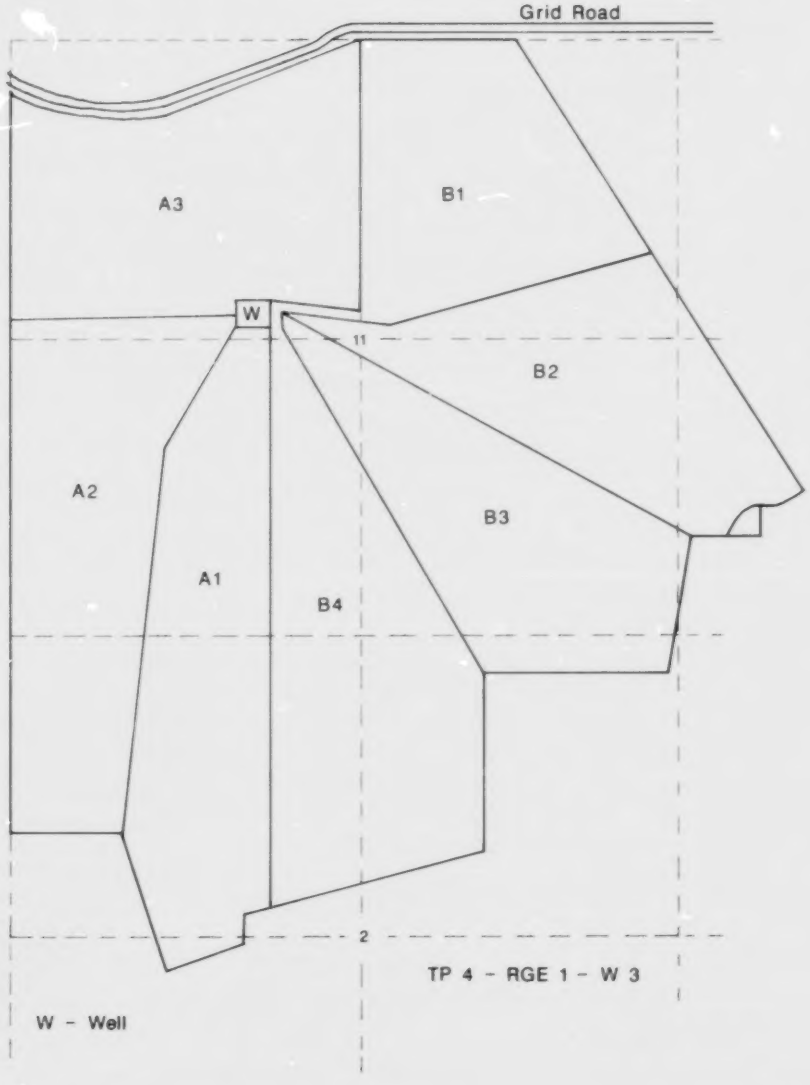
Controlling grazing using electric fences proved to be both economical and practical.

Tabulating grazing days by paddock served to identify some problem areas. Although yields were substantially better than those achieved prior to the project, increased production can still be obtained.

RWR yielded about 510 useable pounds per acre in 1989 in spite of poor moisture reserves; this tabulates to 0.77 AUMS of grazing per acre.

Pastures may not be receiving the full benefit of 34-0-0 when broadcast, so Prefontaines are considering deep-banding between the rows at 24" spacings.

**Raymond and Robert Prefontaine's Grazing Cell**



# A Complementary Grazing System Using Annuals

Co-operator: DAVE SMITH
Box 6, Site 3, SWIFT CURRENT, Sask. S9H 3X7
Tel: 773-2866

Location: SW 15-14-11-W3

Soil: Haverhill sandy loam.

Objective: Lengthen the grazing season through complementary grazing.

## History:

Smith's complementary grazing system included annuals, native range, crested wheatgrass and Altai wildrye. Land traditionally cropped wheat-fallow, in half and half rotation, was grazed after harvest.

In 1987 fall rye was seeded to provide summer grazing. Extremely dry weather in the fall of 1987 and spring of 1988 prevented germination. Favourable conditions in 1989 made for a more successful trial.

Fall rye seeded in late August was graze as soon as green growth appeared in spring. Ideal growing conditions in 1989 produced growth of six to eight inches in ten days.

A minimum of three paddocks were used in rotation and allowed adequate recovery time and prevented rye from heading out. Paddocks were divided by electric fences.

Oats, seeded in late June, provided late July and August grazing. During 1989 heat stress caused the oats to head out prematurely, reducing grazing time.

Crested wheatgrass and Altai wildrye were grazed to lengthen the grazing season during spring and fall respectively.

## Results:

Dry conditions confined 1988 grazing to perennial tame and native pastures. One hundred and sixty acres of perennial pasture yielded 40 AUMS of grazing.

In 1989. one field of fall rye produced 251 lbs of beef per acre or the equivalent of 50 bushels/acre of wheat. Another field produced 105 lbs/acre of beef, or the equivalent of 23 bushels/acre of wheat. A spring seeded oat field suffered drought stress and only produced 25 lbs/acre of beef, equivalent to 10 bushels per acre of wheat at prevailing prices.

On average annuals carried 1.2 AUMS/acre. In comparison, 320 acres of native range carried 0.4 AUMS/acre and produced 25lbs/acre of beef or $20.00/acre profit.

## Observations:

The biggest difficulty was matching livestock numbers to plant growth.

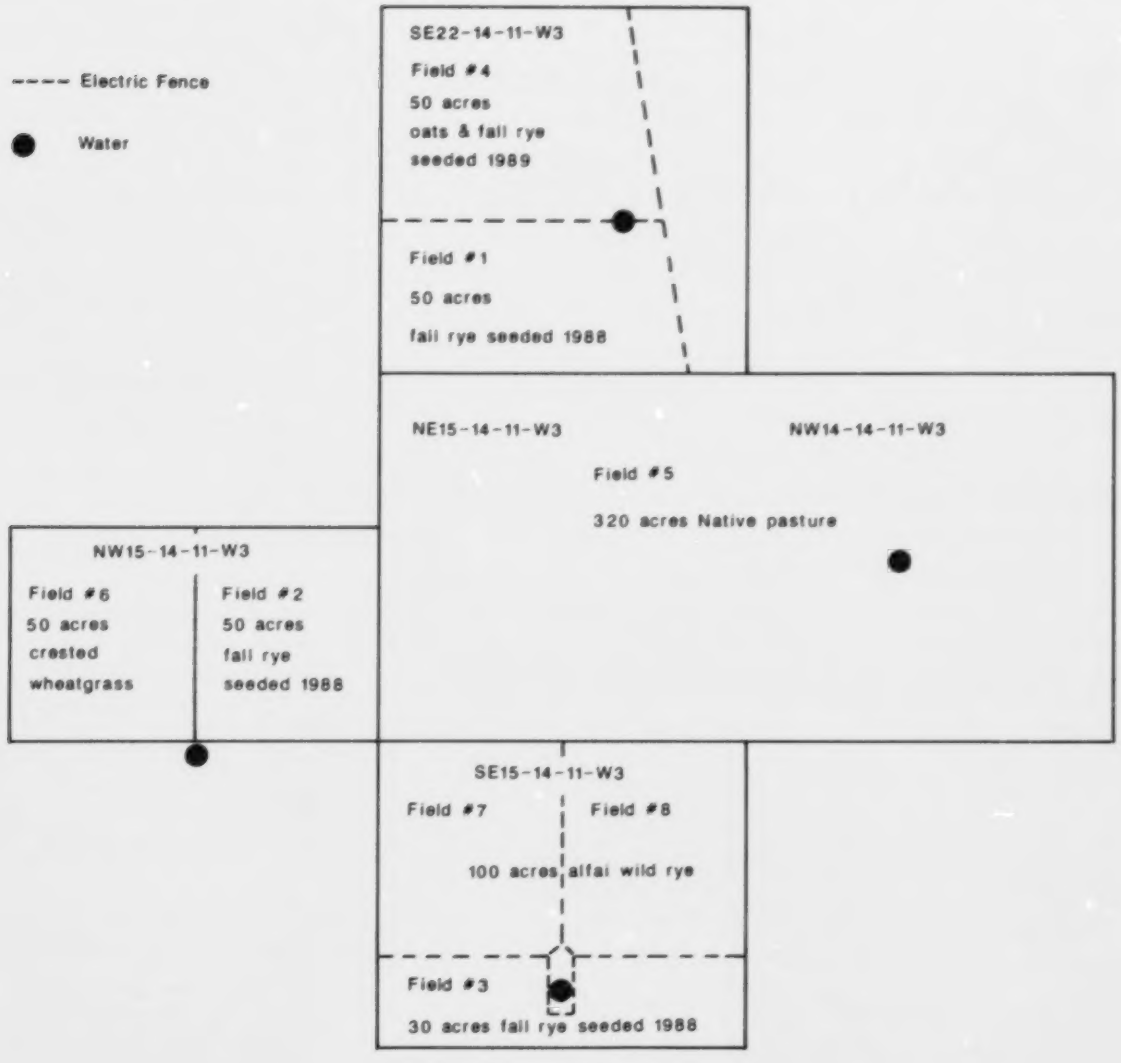
Weeds strongly completed for available moisture and hindered rye regrowth. Weed control is essential.

Smith also believes that fall rye should be worked down in late June in order to prepare the soil for August seeding. In his experience fall rye cannot be grazed successfully for two years.

Oats seeded during mid to late June worked best for grazing.

The main advantage to grazing native range was the lack of any annual input costs.

## Dave Smith's Grazing Cell



# Time-Controlled Grazing

Co-operator: JACK SMITH
Box 53 CRAIK, S0G 0V0
Tel: 734-2776

Location: SEC 8-22-28-W3

Soil: Asquith SL and Biggar SL to GL

Objective: To improve production,lengthen the grazing season and determine benefits of time-controlled grazing.

## History:

The project includes 740 acres of sandy soils consisting of 320 acres native range dominated by needle-and-thread (Stipa comata) and western wheatgrass (Agropyron smithii);325 acres seeded to crested wheatgrass and alfalfa with the remaining area seeded to annuals.

The area was fenced into 27 paddocks varying in size from 14 to 47 acres. Most fence consists of two wires, one 16 gauge ground wire, and one 12 gauge electrified wire.

Cattle were rotated through the paddocks during the grazing season.

The producer experimented with various methods of applying nitrogen and phosphate fertilizers to tame pastures.

## Results:

In 1988, due to dryness of the year, grazing was confined to 374 acres with native paddocks remaining ungrazed. The main herd consisted of 46 Simmental cow/calf pairs. Additional animals grazed the area for brief periods. The grazing season extended from April 30 to July 2. Production totalled 13,338 pounds of beef, with average daily gains of 0.45, 3.05 and 1.50 lbs for cows, calves and heifers respectively. Total rainfall was 23 mm.

In 1989, 488 acres were grazed,with the remainder either hayed, combined or rested for the year. The grazing season started on April 24 with 89 cow/calf Simmental pairs. On May 26, 21 pairs where removed for placement in a community pasture. The remaining pairs grazed until August 28. Cows and calves averaged 1.05 and 2.80 lbs/day respectively over the grazing season and produced a total of 34,200 pounds of beef. In addition, 48 tons of hay and 3,600 bushels of oats were harvested from the area not grazed. Total rainfall was 182 mm.

## Observations:

Electric fence post spacing varied but 60 feet was found adequate where fibreglass rods were not used as spacers. Good insulators on ends and each post are a must.

It was necessary to separate out fertilized areas to prevent the cattle from concentrating on these sites.

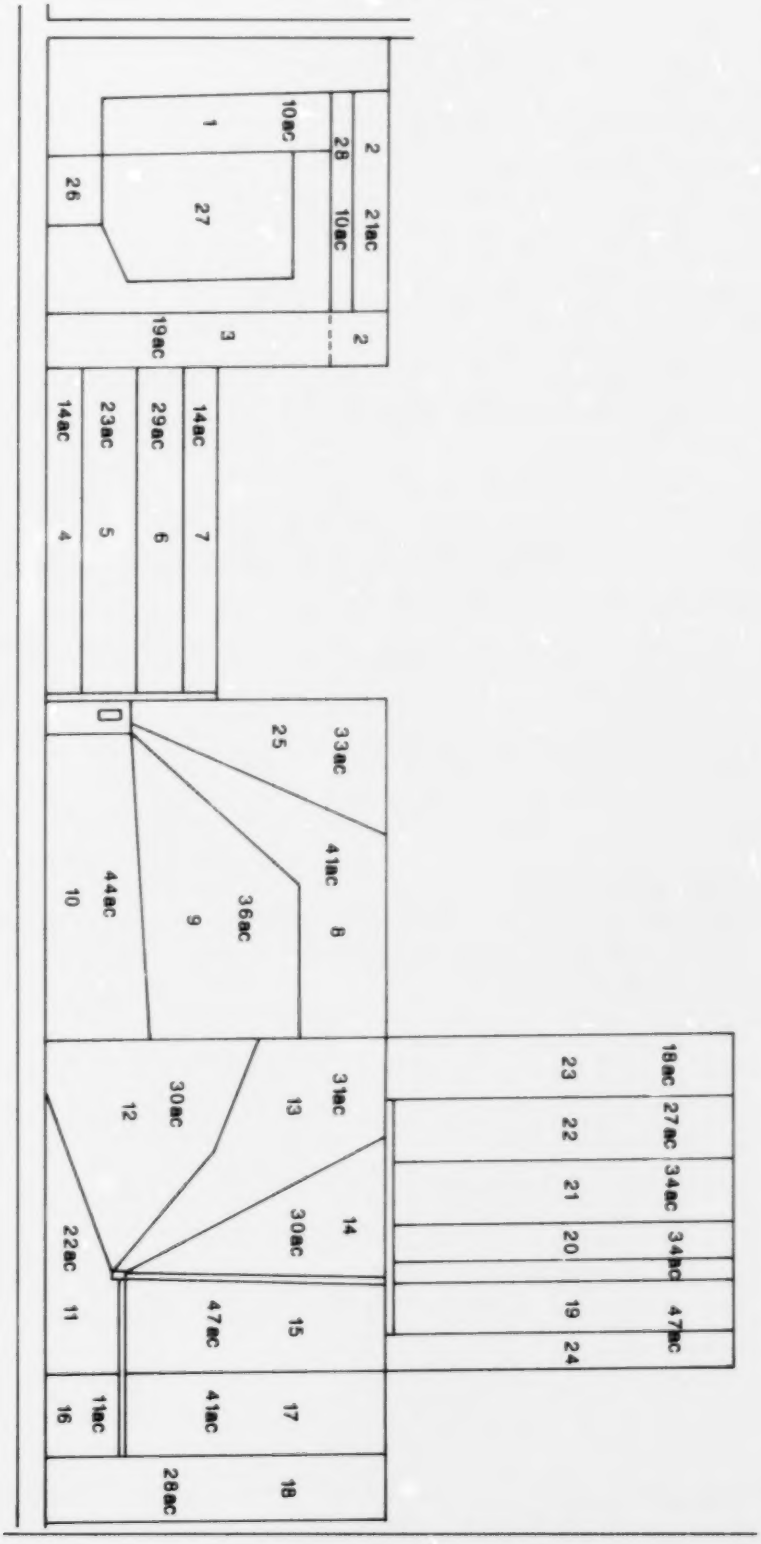
The placement of phosphorous fertilizer appears to be of the greatest importance.

Average time to move the cattle was around 20 minutes including travel time.

Utilizing the land through rotational grazing worker but required more time than conventional grazing. Timing of rotations was critical so its important to have the available time to manage the system well.

Smith hopes to achieve a nine month grazing season by rotationally grazing a combination of tame forage and native range.

## Jack Smith's Grazing Cell



# Southwest Forage Association Project

Co-operator: SOUTHWEST FORAGE ASSOCIATION
SWIFT CURRENT, S9H 3X2
Tel: 773-4621 (Dr. Neal Holt)

Location: Swift Current Research Station

Soil: Haverhill loam

Objective: To compare production of several forage species.

## History:

Southwest Forage Association in co-operation with Agriculture Canada, Swift Current did a study of beef production on seeded annuals, seeded perennial pasture and native range.

Meadow bromegrass, Russian wildrye, intermediate wheatgrass, and Altai wildrye were each sown in a mixture with alfalfa and grazed by yearlings. The productivity of each was measured.

## Results:

Productivity was excellent in 1989.

Total liveweight production was 180 kg/ha at one site and 175 kg/ha at a second location. The grazing period was 110 days with an average of 154 animal days/ha achieved.

## Observations:

Differences among grass-alfalfa combinations were insignificant.

Meadow brome provided the best balance of grass-alfalfa in its mix while Russian wildrye contained the least alfalfa, but also the fewest weeds.

# Intensive Grazing Management Under Southwestern Conditions

Co-operator: MARK STOCK
Box 128, HAZLET, Sask.
S0N 1E0
Tel: 678-4811

Location: SW 19-17-21 and Hazlet

Soil: very fine sandy loam

Objective: To utilize fall rye for pasture and intensively use crested wheatgrass and native pasture through time - controlled grazing.

## USE OF FALL RYE

### History:

Stock operates a 150 head Simmental, Charolais and Red Angus crossbred cow/calf enterprise. Fall rye has been grown since the early 1970's. He relies on spring sown rye to extend the grazing period into June or July. Under favourable conditions rye will overwinter to provide pasture the following year. This allows delayed grazing of native range, and provides an opportunity for spring growth.

Stocking rates on fall rye are adjusted based onto the crop's growth curve, gradually increasing animal numbers to hold the plants in a vegetative state. This suits their operation, as it allows cows to move out to pasture as they calve.

In the fall of 1987 70 acres were seeded to fall rye for spring grazing. In the fall of 1988 30 acres of summerfallow were seeded and the previous 70 acres were worked down in preparation for spring seeding in 1989.

In 1989 the 70 acres were spring seeded to fall rye on May 18, then split into two paddocks.

### Results:

The 1988 grazing season began May 12 and ended June 27 with cattle being rotated through eight paddocks. Thirty-eight yearling heifers and 10 cows grazed. Two cows were removed on May 18. The remaining eight cows were removed June 4. A temporary electric fence was used and moved as required.

The average weight of heifers onto pasture was 887 pounds. Average weight off on June 27 was 953. Average daily gain was 1.89 pounds. No weights were kept on the cows.

In 1989 grazing began on May 20 with 25 yearlings, 22 two year olds with calves and 10 cows being put on the 30 acres of fallseeded fall rye. The area was split into two fields.

Cattle were rotated every seven to 10 days depending on growth. Cattle were removed June 14 for six days. Yearlings and two year olds with calves were returned to the fall rye June 20. The two year olds were removed June 26 and one bull added. The cattle were rotated onto the 70 acres of spring seeded fall rye on July 4 and were removed August 7.

Between May 20 and June 14 yearlings gained an average of 76 pounds, the two year olds gained an average of 92 pounds and the calves gained an average of 59.2 pounds.

## Observations:

Fall rye is considered a versatile crop useful for spring and summer pasture, or removed as green feed or grain. Fall rye is used as a tool to complement our livestock-forage programme.

Data is not sufficient to make any assessment of pasture performance.

## TIME CONTROLLED GRAZING

### History:

Due to lack of cross-fencing between the tame and native grass, three quarters of native grass and two quarters of crested wheatgrass had historically received only limited grazing. Cattle were free to travel between the pastures resulting in under grazing of the tame grass causing it to grow rank or wolfy while parts of the native grass were grazed off.

Conventional barbed wire cross-fences were built in the spring of 1987 to hold cows on the crested wheatgrass. The native range was divided into eight paddocks varying from 40 to 100 acres using electrified barbed wire. The crested wheatgrass was divided into 12 paddocks (8 - 20 acre and 4 - 30 acre).

### Results:

The area was rotationally grazed during 1987. However, as cattle weights or pasture data were not taken assessment of the system was not possible.

During 1988 the native area was not used and the crested wheatgrass was used minimally.

The 1989 grazing season began April 25 with 40 cow/calf pairs. Cattle were added at various times and rotated through the 12 crested wheat paddocks until a total of 120 pairs was reached.

An additional 160 acres of crested wheatgrass divided into three paddocks were added to the system.

On August 1 calves were weighed. It was found that going onto the crested wheatgrass the 40 calves averaged 91 pounds and 120 calves coming out weighed 310 pounds. Cows were not weighed.

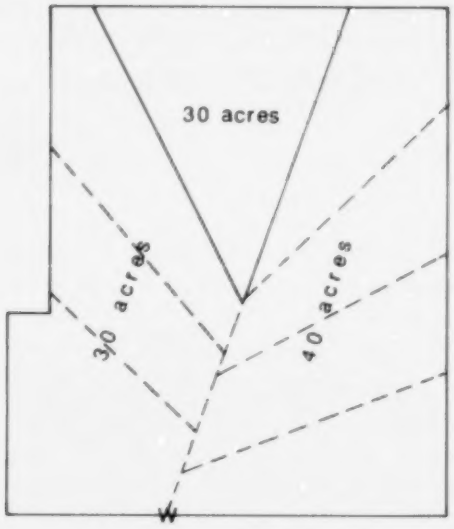
August 15, the 120 pairs were moved onto the native range, grazing each paddock from two to seven days depending on size and forage availability.

### Observations:

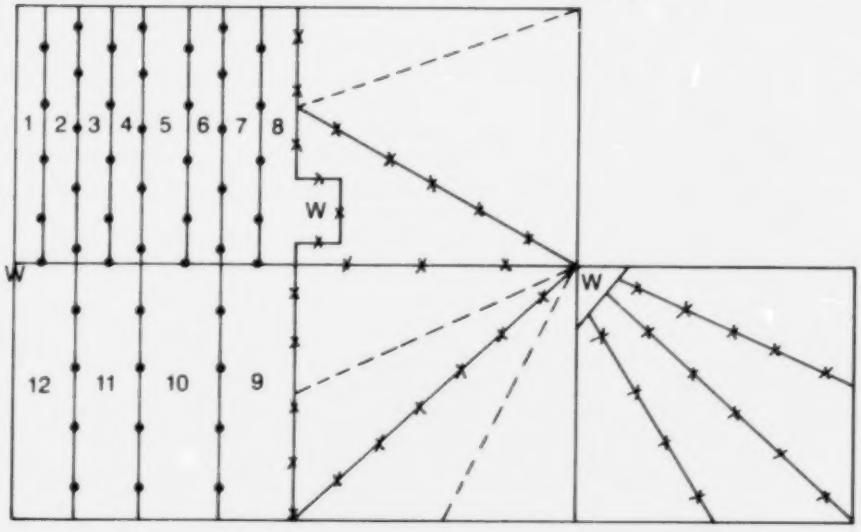
There is insufficient data to determine pasture production since all cattle were not weighed either in or out of the pasture.

Better utilization of the crested wheat and native pasture was obtained by intensive grazing.

**Mark Stock's Fall Rye Grazing Cell**




**Mark Stock's Time Controlled Grazing Cell**




| | |
|---|---|
| W | Water |
| ——— | Existing Perimeter Fence |
| ——x——x—— | Phase 1 Fence (in place 1987) |
| ——•——•—— | Phase 2 Fence |
| - - - - - - | Phase 3 Fence (proposed) |

# Southeast Region

## Rotational Intensified Grazing

Co-operator: RODNEY & ANGELA DUCZEK
Box 417, WHITEWOOD, Sask. S0G 5C0
Tel: 735-4171

Location: SEC 9-16-1-W2

Soil: Oxbow and Whitewood loam

Objective: To improve beef production using intensive rotational grazing.

### History:

Duczeks have grown tame forages for hay production and cattle grazing for over 20 years. In 1985 they developed an intensive grazing system utilizing six quarters of gently rolling land divided into 24, 40 acre paddocks.

Five paddocks in crested wheatgrass and alfalfa were seeded in 1984. The remaining paddocks contain brome/alfalfa, with small areas of slough grass and aspen cover. Seeded stands vary in age from five to 17 years. Most paddocks are annually broadcast with 200 pounds of 34-0-0 fertilizer during mid to late April.

The perimeter and most cross-fences are four-strand barbed wire. Single-strand smooth electric wire was used to separate the smaller paddocks with live current supplied by one Speedrite HB12 fencer attached to a 12 volt battery.

Livestock receive water from the yardsite, sloughs, and three dugouts.

### Results:

Stocking rates in AUMS/acre have been 1.7, 2.5, 2.1, 1.8, and 1.6 in 1985, 1986, 1987, 1988 and 1989 respectively.

**Grazing Information**

| Grazing Season | Days | No. & Class of Animals | LBS Beef | Acres | Precip. (mm) |
|---|---|---|---|---|---|
| 1985 | | | | | |
| May 15-Sept 25 | 129 | 305 steers<br>230 heifers | | 960 | 414 |
| | | 535 | N/A | | |
| 1986 | | | | | |
| May 3-Sept 1 | 122 | 401 steers<br>447 heifers | | 960 | 516 |
| | | 848 | 163,638 | | |
| 1987 | | | | | |
| Apr 29-Sept 10 | 136 | 225 steers<br>424 heifers | | 960 | 231 |
| | | 649 | 176,814 | | |

| Grazing Season | Days | No. & Class of Animals | LBS Beef | Acres | Precip. (mm) |
|---|---|---|---|---|---|
| 1988 | | | | | |
| May 12-Aug 26 | 107 | 223 steers | 45,585 | 960 | 218 |
| May 6 Aug 27 | 114 | 317 heifers | 47,590 | | |
| | | 540 | 93,175 | | |
| 1989 | | | | | |
| May 10-Aug 12 | 94 | 425 steers | 75,650 | 960 | 240 |
| May 17-Aug 11 | 87 | 200 heifers | 31,400 | | |
| | | 625 | 107,050 | | |

Costs: Fencing materials cost about $550 per quarter section and required about 4.5 person days to build.

## Observations:

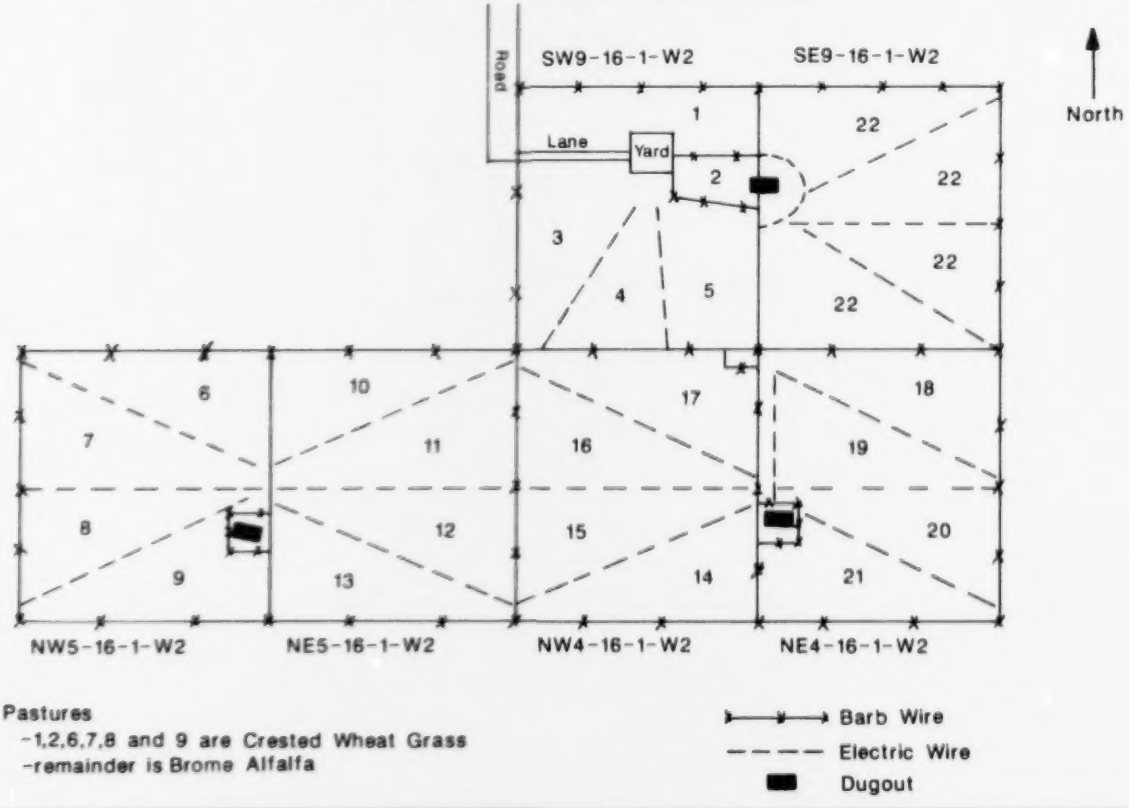
Rotational grazing has worked well for the Duczeks. Even during years of relative drought, gains and stocking rates exceeded those achieved by producers using conventional grazing management.

Water quality has deteriorated because dugout walls have collapsed from increased livestock trampling.

Cattle are moved according to rate of grass growth; fast moves with rapid growth, and slow moves with slow growth. The objective is to keep grass in a vegetative state, while leaving enough leaf material to ensure adequate regrowth, without depleting carbohydrate reserves.

Paddocks having only one or two species of grass are much easier to manage.

**Rodney and Angela Duczek's Grazing Cell**



# Weed Control, Rejuvenation and Direct Seeding for Pasture Improvement

Co-operator: HYDE GRAZING CO-OP (President Cliff Allen)
Box 184, LEMBERG, SK. S0A 2B0
Tel: 335-2768

Location: SEC 20-19-10-W2

Soil: Oxbow Loam to Light Loam and Whitesand Sandy Loam to Gravelly Loam

Objective: To look at different methods of rejuvenating an old stand of crested wheatgrass.

## History:

In 1964, the Hyde Grazing Co-op, near Neudorf, Saskatchewan entered into a lease of this native pasture. In the spring of that year the land was broken using disk equipment and in the fall seeded to crested wheatgrass and alfalfa. Over time, due to drought and many years of season long grazing, the alfalfa disappeared and the crested wheatgrass became unproductive.

In 1987 different methods of rejuvenating the old grass stand were started. On some areas weed control measures were taken, others were spiked to rejuvenate the grass stand and portions had alfalfa direct seeded into existing sod.

## Results:

After two growing seasons, the treatment of dichlorprop + 2,4-D, applied at 1.1 1.0 kg (ai)/ha, adequately controlled pasture sage, increased forage production and was cost effective. Considering only the herbicide cost and the value of hay, profit increased by 23%, compared to an untreated area.

After two growing seasons, the area that received a single fall pass with cultivator spikes showed increased production. Considering only the cost of a spike treatment and the value of hay, profit increased 18% and forage increased 26%.

Alfalfa established when cultivator spikes or glyphosate (Roundup) were used to reduce crested wheatgrass competition.

## Observations:

Spiking was the most cost effective treatment to increase production on the old crested wheatgrass pastures. Spikes were superior to glyphosate because the population of pasture sage increased following use of this herbicide. Also, the herbicide was more expensive. The costs for glyposate, direct seeding, alfalfa seed and fertilizer were not recovered by forage increases after two years.

Control of pasture sage, identified as the main weed problem, was inconsistent with use of 2,4-D.

The value of direct seeded alfalfa will be known in 1990.

# Low Frequency, High Intensity, Rotational Grazing

Cooperator: DENZIL ROSZELL
Box 424, PUNNICHY, Sask. S0A 3C0
Tel: 835-2818

Location: SEC 35-28-20-W2

Soil: Oxbow and Cudworth loam

Objective: To test low frequency, high intensity rotational grazing for its effects on stocking rates, soil fertility, grass production and survival, animal performance and management demands.

## History:

This land, on the northern edge of the Touchwood Hills, was in grain production for 40 years prior to Denzil's 1971 purchase.

Starting in 1975, grass-legume mixtures were seeded to combat erosion and improve soil structure. This was intended to be a three-year rotation of grass with a reversion back to grain. It was found that returns from livestock and hay sales were better than previous grain production. This lead Roszell to convert all of his cultivated land and by 1979 all land was in grass-alfalfa or alfalfa.

Roszell was looking to expand his cow herd without increasing his land base. After some investigation into controlled grazing he successfully applied the principles to his own operation.

In 1984, 200 acres were fenced and re-seeded to a mixture of brome, alfalfa and intermediated wheatgrass at rates of five,three and two lbs/ac respectively. Beginning in 1985, the 200 acres of tame pasture were divided into six paddocks and grazed with a 160 acre paddock of native bush.

In 1988, 50 acres of winter wheat were added to the forage base.

The 1989 grazing season started out very dry with water pumped in order to fill the dug-out. Significant rainfall of 40 mm occurred on May 23, producing significant grass growth by June 3. By June 6,when cattle were turned on pasture, grass averaged from six to eight inches.

During 1989, an additional 50 acres of alfalfa, and 60 acres of bush pasture were added to the grazing cell. An additional 60 acres of lowland also became available for grazing as several sloughs dried up.

During 1986 and 1987 fertilizer (34-0-0) was broadcast at 200 pounds per acre. In 1988 and 1989 fertilizer was knifed in with an air seeder and VERN grassland knives. In accordance with soil test recommendations, a 34-14-0-9 blend at 150 lbs/acre was applied in 1988, while a 34-17-0-0 blend at 165 lbs/acre was applied in 1989.

## Results:

In 1985 the six tame grass paddocks and one bush paddock carried 65 cow/calf pairs from late May until mid-September. During 1986 and 1987, the herd was expanded to 100 cow/calf pairs on the same land base. The grazing season was approximately the same length.

With addition of winter wheat acres and in spite of severe 1988 drought conditions, 107 cow/calf pairs and three bulls were grazed from June 7 to September 26. Calves, cows and bulls averaged 2.45, 0.5 and 0.7 pounds gain per day respectively. An overall carrying capacity of 1.1 AUMS/acre was achieved.

In 1989 the cell including the additional alfalfa and bush pasture was used to graze 99 cows, 94 calves, and three bulls from June 6 to September 27. Calves, cows and bulls averaged 2.23, 1.1 and 1.5 pounds gain per day respectively.

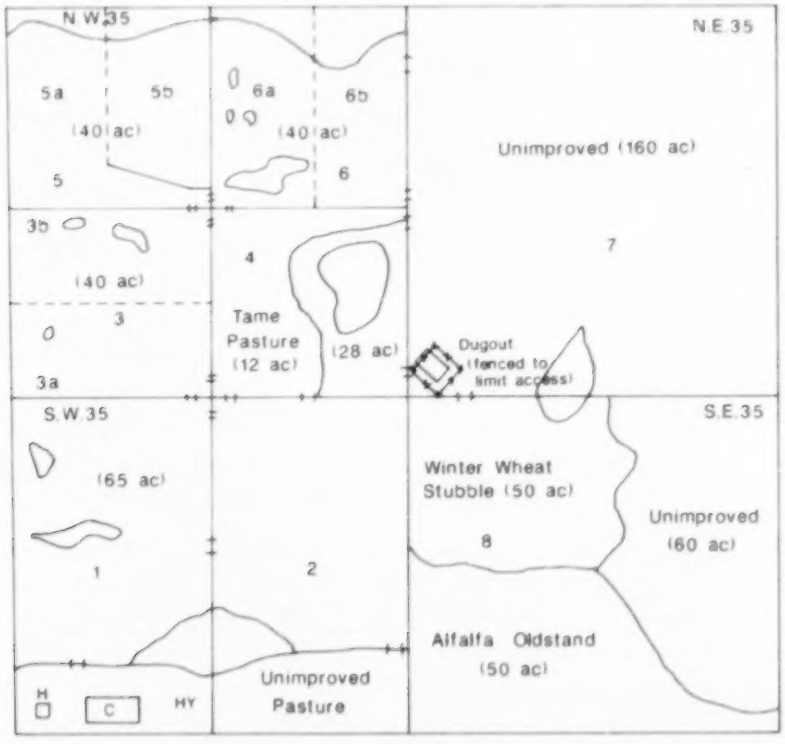
**Grazing Information:**

| Grazing Season | Days | No. & Class of Animals | LBS Beef | Precip. (mm) | Acres |
|---|---|---|---|---|---|
| 1988 | | | | | |
| June 7 to Sept 26 | 112 | 107 cows<br>107 calves<br>3 bulls | 5,778<br>29,318<br>240 | 290 | 410 |
| 1989 | | | | | |
| June 6 to Sept 26 | 113 | 99 cows<br>94 calves<br>3 bulls | 13,000<br>23,800<br>500 | 393 | 580 |

## Observations:

The use of low frequency, high intensity, rotational grazing worked well for this producer enabling him to achieve his goals.

**Denzil Roszell's Grazing Cell**




Gates

H House

C Corrals

HY Hay Yard

# Limited Land Base Development

Co-operator: SASKATCHEWAN BEEF CATTLE PERFORMANCE ASSOCIATION
Box 3266, REGINA, Sask.
S4P 3H1
Tel: 775-2930

Location: NE 19-20-19-W2

Soil: Weyburn loam

Objective: To demonstrate how producers can successfully graze livestock on a limited land area.

## History:

The Saskatchewan Livestock Centre is located 16 miles north of Regina. At one time, a majority of this gently rolling Weyburn loam plain was cropped annually. In the early 1970's the land was acquired by the Saskatchewan Hereford Association and seeded to forages and fenced into four paddocks. Approximately 30 acres of native grass and bush made up a fifth paddock.

The Saskatchewan Beef Cattle Performance Association acquired the land in 1984,taking 35 acres out of production to develop feedlot, shelterbelt, lawn and feed storage areas.

## Results:

After seeded forage was established the land was used for grazing and hay production until 1983.

During 1984 the area was grazed for 50 days by 30 yearlings.

In 1985 the tame paddocks were harvested and produced 77 tons of hay.

In 1986 the tame paddocks were fertilized with 50 tons of feedlot manure and harrowed twice. Fifty tons of hay were harvested on a first cutting, and a second cutting on 10 acres yielded an additional seven tons of hay. The native pasture provided 108 days of grazing for 12 heifers.

In 1987 the tame forage was again harvested. The one cut produced 60 tons of hay. The regrowth provided 34 days of grazing for 30 cow/calf pairs and one bull. The native pasture provided 800 animal days of grazing for the cow/calf pairs.

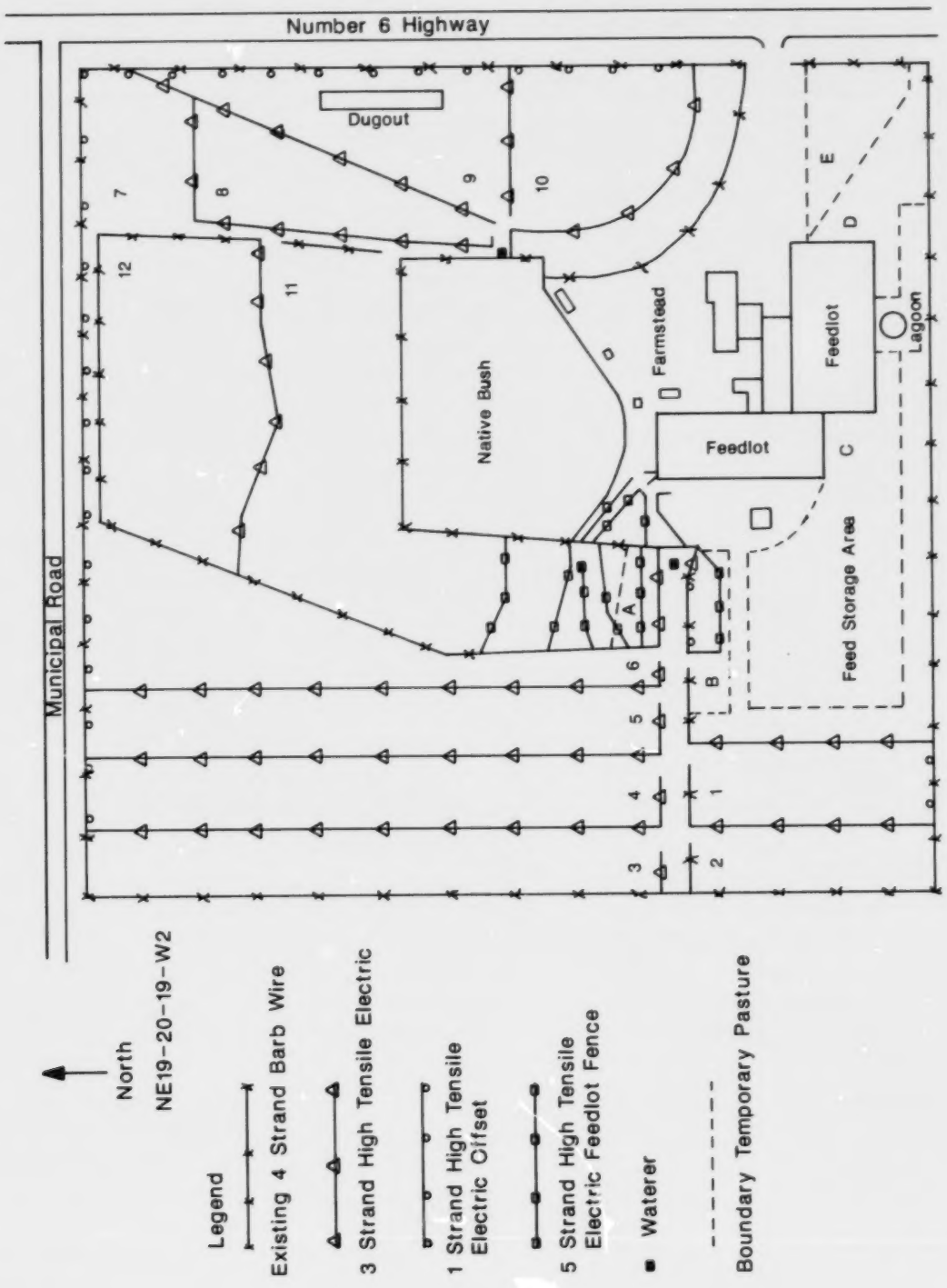
In 1988 48 cows, 47 calves, five heifers and one bull were grazed on 135 acres. A total gain of 14580 pounds was achieved representing production of 145.8 lbs per acre.

In 1989 41 cow/calf pairs, five heifers and one bull were grazed on 105 acres. A total gain of 17,160 pounds was achieved representing production of 163.4 lbs per acre.

## Observations:

The conversion of this former crop land to tame forage has worked well providing hay and grazing use on a limited land base.

## Beef Cattle Performance Association's Grazing Cell



# T-Four Ranches Ltd. Project

Co-operator: T-FOUR RANCHES LTD., Ian & Lloyd Thompson
Box 609, CARNDUFF, Sask.
S0C 0S0
Tel: 482-3743

Location: SEC 8-3-22-W1

Soil: Whitesand assoc., loamy sand, flat, stone free

Objective: To determine if improved production can be obtained by controlled grazing of poor quality farmland presently allowed to revert without seeding grass.

## History:

Six hundred forty acres, under cultivation for over 40 years, were acquired in the winter of 1987-88. Returns from annual crop production were poor.

At the time of purchase there were: 160 acres of summerfallow, 200 acres of stubble, 120 acres of poor alfalfa and 160 acres of mainly quack grass (Agropyron repens) that had been left to revert. There were no fences or water.

At the centre of the section a shallow well was dug, corrals were built and electricity put in to supply the electric fencer and water pump.

The perimeter was fenced with two strands of electric wire - both hot. Single strand electric cross-fences divided the section into 16, 40 acre pie-shaped paddocks.

In the spring of 1988, the 160 acres of summerfallow were harrow packed. Some of the larger bare spots in the standing stubble were seeded to fall rye, but did not produce until fall of 1988. On May 18,200 British cross heifers were put on the quack quarter.

The 1989 grazing season started May 17. At that time, 197 two year old British cross-breds and their calves were placed in the cell. On June 10, 140 yearlings were added to help keep up with the grass.

## Results:

By June 1, 1988 all forage growth was consumed, however, by then the rest of the section was divided and a three day rotation was started. Wild millet produced a fair amount of grazing later in the season. Hay (21 tons) was made on three paddocks.

In 1989 the lack of rainfall forced removal of the yearling heifers on July fifth. By July 28 there was still no rain, so the two year-olds were moved out and the yearling heifers were moved back in. By Aug 17 the cell was out of grass.

| **Grazing Information:** | **1988** | **1989** |
|---|---|---|
| no. animals | 200 heifers; 5 bulls | 167 cows; 150 calves; |
| acres | 640 | 640 |
| season | May 18-Oct 19;June 15-Aug 31 | see paragraph above |
| gain | 1.2 lbs/day; N/A | not available |
| production/ac | 57.2 lbs/ac | not available |
| stocking rate | 1.3 AUM/ac | not available |
| precipitation | 11.8 inches | 4.8 inches |

* animals flytagged, vaccinated, implanted
** duster fly control, vaccinated

## Observations:

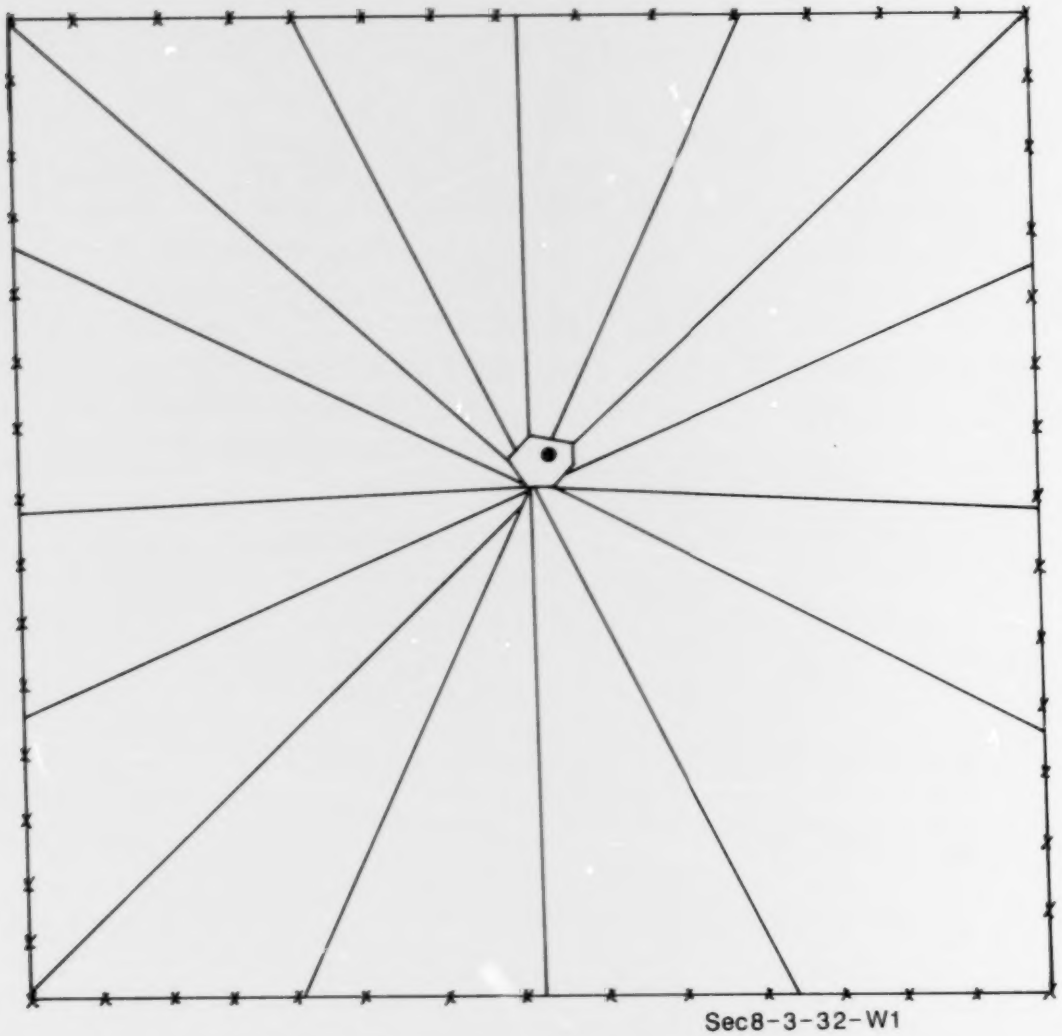
From soil samples taken in 1988 and 1989, it would appear that soil nutrient status is improving.

Wild millet did not grow in 1989.

Quack grass growth slows as summer progresses.

In the short-term, the operators goal was met. However, unable to determine profitability or sustainability from available information.

**Ian and Lloyd Thompson's Grazing Cell**



## Northeast Region

# Bar-7 Cattle Company Grazing Project

Co-operator: DON & FLO ANDERSON, RANDY & SUSAN HAMILTON
Box 117, PRINCE ALBERT, Sask.
S6V 5R4
Tel: 764-5646

Location: SW 27-51-27-W3

Soil: Pelly loam (degraded black) and Paddockwood loam (wooded calcareous)

Objective: To evaluate intensive grazing as a more economical and profitable utilization of land in comparison to grain production and determine if it helps preserve and maintain the land.

## History:

The Bar-7 project evolved on six quarters of former grainland. In 1985, the first three quarters were seeded to a mixture of smooth brome and alfalfa with a cover crop of canola.

Perimeter fence was built in the spring of 1986, with the water system and paddocks completed in 1987.

Each quarter, consisting of four 40 acre paddocks, has water at a central site, piped in from a well. Cattle were moved every two to four days among the 12 paddocks.

The fourth quarter, developed in 1987. was spring seeded to smooth brome and alfalfa with a barley cover crop but was not grazed until late Sept to allow for seedling establishment.

In the spring of 1988 nitrogen ,the only fertilizer used since 1984, was applied at a rate of 100 pounds per acre. Cattle were moved every two to three days. Rotation involved moving animals to paddocks ready for grazing.

Most paddocks were sprayed in an attempt to reduce alfalfa levels and alleviate bloat problems. Animal numbers were reduced from 1987 to compensate for any forage loss due to spraying.

Two more quarters were sown to Regar meadow brome (7 lbs) and alfalfa (1 lb) with a rape cover crop. The spring of 1989 saw all remaining fencing and water development on the additional quarters completed. The operation now consisted of six quarters tame grass fenced into 24, 40 acre paddocks.

All fencelines are constructed of smooth high tensile wire. The four strand perimeter fence has the second wire insulated. Cross-fences are single strand electrified wire. A solar paneland battery, moved as required, operate the electric fencer.

## Results:

In 1985 they harvested 12 bushels per acre of canola while leaving a good catch of grass.

During 1986, with no paddocks in place, 35 yearlings grazed each quarter and 120 round bales were harvested.

In 1987 the three developed quarters pastured 430 heifers from May 13 to July 23 when they were sold because of good market conditions and bloat problems. Rest time on paddocks was 28 to 30 days. Good rains after market date allowed harvest of 80, 4-ton truck loads of silage. After being hayed, 104 yearling steers, weighing 700 lbs and 50 cow/calf pairs were pastured from Sept. 29 until Oct. 20.

The 1988 grazing season started May 18 and ended September 15. Three hundred fifty heifers, with an average initial weight of 651 pounds, were rotationally grazed on the four quarters.

In 1989, with all six quarters developed, 478 yearling steers grazed from May 12 to August 7.

Grazing Information:

| | 1987 | 1988 | 1989 |
|---|---|---|---|
| no. animals | 430 heifers | 350 heifers | 478 steers |
| acres | 480 | 640 | 960 |
| season | May 13-July 23 | May 18- Sept 15 | May 12- Aug 7 |
| gain | 1.7 lbs/day | 1.62 lbs/day | 1.45 lbs/day |
| production/ac | 108 lbs/ac | 103 lbs/ac | 58 lbs/ac |
| stocking rate | 1.7 AUM/ac | 1.7 AUM/ac | 1.3 AUM/ac |
| precipitation | 7 inches | 8.8 inches | 6.0 inches |

Costs: Electric fencing approximately $550.00 per mile. Water development, salt, drugs, fuel.

## Observations:

Pounds of gain account for minimal input costs once capital expenditures are completed.

Through developing this system the co-operator gained experience in determining stocking rates, forages, weight gains, animal health etc.

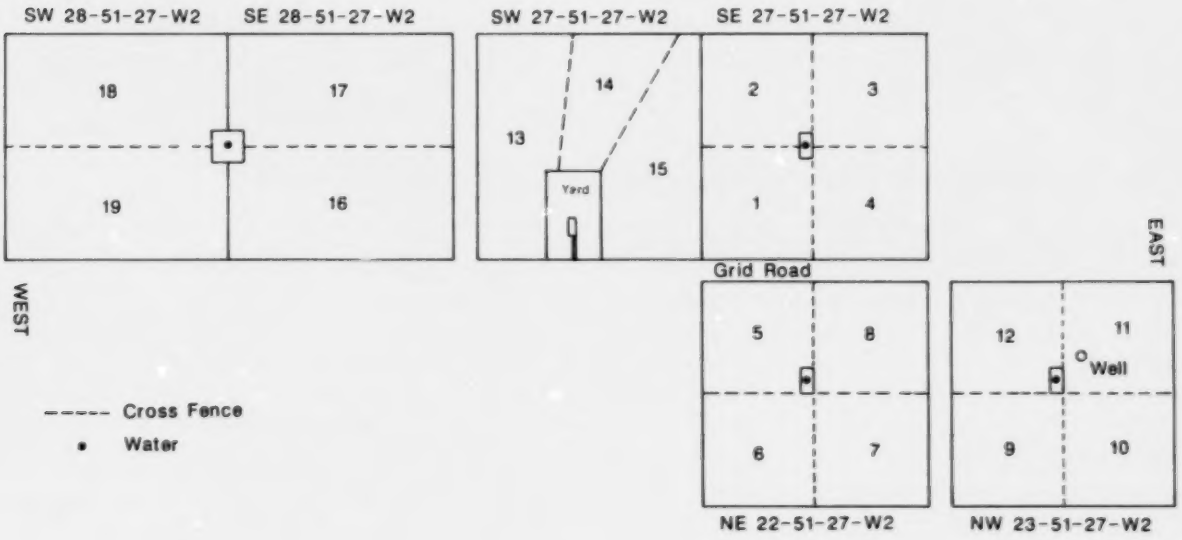
The co-operator found this system provided ease of livestock handling, ability to efficiently separate and treat cattle and convenient monitoring of livestock progress.

After some experience, electric fence was found effective and easy to erect.

Moving animals took approximately 10 minutes each time.

This system requires a daily management commitment of no less than one hour per day to a maximum of 20 hours per week.

**Bar-7 Cattle Company's Grazing Cell**



# Rotational Grazing of Annual Forage

Co-operator: RAYMOND GAUTHIER
Box 246, DUCK LAKE, Sask.
S0K 1J0
Tel: 232-4985

Location: NE 5-43-2-W3

Soil: Meota sandy loam

Objective: To test grazing of annuals in combination with native grasses and to determine if this is a viable alternative to growing a cash crop.

## History:

A quarter of land with 36 acres cultivation, 45 acres tame pasture and 40 acres of sloughs and bush was fenced into nine separate fields and a rotational grazing system implemented.

Starting in 1985, saline areas (field #1,#7,#8) were seeded to a mixture of salt tolerant grasses. In field #1, a combination of Altai wild rye, Russian wild rye and crested wheatgrass was seeded in 12" rows each at the rate of 2 lbs/ac; while Alfalfa and Puccinella distans were seeded in alternate rows at 2 lbs/ac. On fields #7 and #8, a combination of Altai wild rye and bromegrass were seeded in 12" rows at 2 lbs/ac. Alfalfa at 3 lbs/ac was seeded in alternate rows. These fields were cut for hay in 1986.

In 1987 field #1 was pastured for the entire season and fields #7 and #8 were cut for hay then pastured. In the spring, field #9 was seeded to fall rye at 1 bu/ac and oats at 3/4 bu/ac then grazed from June 1 to the end of September. Cattle grazed without the use of cross fencing. Fertilizer was deep banded into #3,#4,#5,#6 at the rate of 70 lb/ac actual N and 15 lb/ac actual P, in preparation for 1988.

On May 10, 1988, fields #3 through #6, (36 acres) were seeded to a mixture of fall rye (1 bu/ac) and oats (1 bu/ac). Buctril M was applied on June 14.

The producer did not carry out any seeding, fertilizing or chemical weed control in 1989.

The perimeter and saline areas are fenced with three strand barb wire. Cross fences are built with wooden posts and a single strand of electrified twine or smooth galvanized wire.

## Results:

During 1987, 30 steers and 30 cow/calf pairs were pastured on the project area.

In 1988 29 cows, 24 calves and 30 steers went on pasture June 1,starting with field #9. Due to winterkill of the fall rye there was little production and animals were rotated off June 6. Field #9 was not used again.

Animals were rotated through the remaining fields every five to 12 days. Due to drought conditions and location of water sources livestock had continuous access to field #2 until July 31 and there after had continuous access to field #7. Dry conditions and extreme heat contributed to poor growing conditions. As a result, the steers were removed Aug 23 and placed in a feedlot. Cows and calves remained on the project until October 1. There was very little residue remaining on any pasture.

For 1989 30 steers, 29 cows and 24 calves were pastured using a three to 10 day rotation. Although moisture was good cool spring temperatures slowed spring growth. The fall rye provided good early growth but growth stopped in early August requiring the removal of the steers.

**Grazing Information:**

| | 1988 | 1989 |
|---|---|---|
| no. | 29 cows;24 calves;30 steer | 26 cows;26 calves;30 steer |
| acres | 121 | 121 |
| season | June 1 - Oct 1 | May 15 - Oct 1 |
| gain lbs/day | 1.23 ; 2.45 ; 2.05 | 0.44; 2.02 ; 2.1 |
| production/ac | 139 lbs/ac | 228 lbs/ac |
| stocking rate | 1.67 AUM/ac | 1.7 AUM/ac |
| precipitation | 11.35 inches | 13.3 inches |

Costs: electric fence - $750 per mile
fertilizer - $24.45 /ac

## Observations:

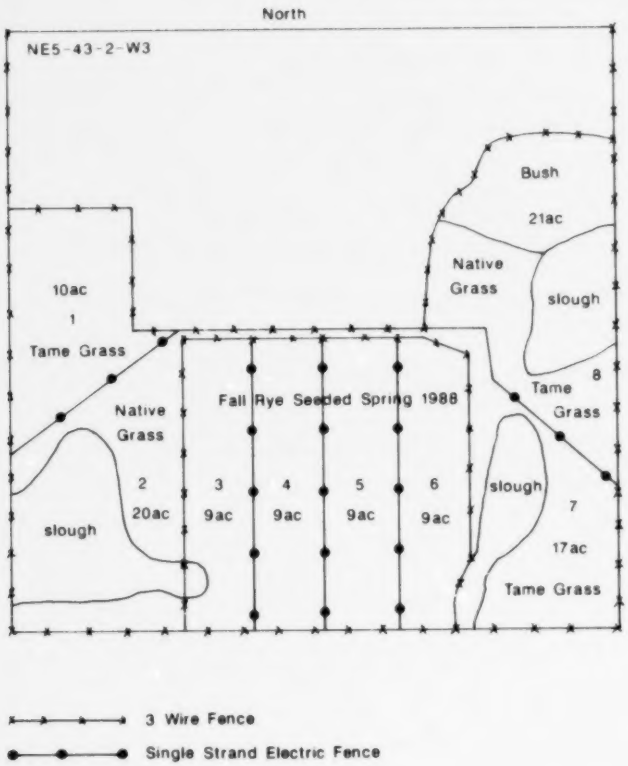
There was some initial trouble with the electric fence. The wire was too low and a lack of moisture produced poor grounding. Raising the wire height and adding a ground wire for part of the fence helped.

The system provided easy movement of cattle.

Timing of fall rye grazing in the second year is critical.

The producer feels the returns from using annuals and tame forage in an intensive rotational grazing system compare favourably to grain farming even on productive grain land.

**Raymond Gauthier's Grazing Cell**



# Grazing on North-East Grey Soils

Co-operator: GEORGE LIDSTER
Box 415, WHITEFOX, Sask.
S0J 3B0
Tel: 276-2567

Location: SW 18-53-13-W2

Soil: Carrot River (wooded calcareous) sandy loam to very light sandy loam; some pine sand.

Objective: To evaluate intensive grazing in the areas of animal performance, sustainability, and management involvement.

## History:

For 20 years the co-operator grazed low densities of livestock on bush pasture combined with tame grass. In 1984 he began developing a grazing system.

Two quarters of former grainland were underseeded to timothy and red clover and hayed in 1985. One quarter was fenced into 4, 40 acre paddocks, the other was left as a 160 acre field. A rotational grazing system began in 1986.

For the 1987 grazing season, the two quarters of tame grass were fenced into 12 paddocks and custom grazed. A section of predominantly bush was used to graze the co-operators herd.

By 1988 the system consisted of two separate pasture units. One unit is a section of aspen forest, divided into three paddocks. The other is 480 acres of tame grass, dominated by quack grass and Agrostis spp., divided into 11 paddocks. Additional water sites and a new lane system were constructed to improve watering.

During 1989, units were adjusted to the acreages shown in the diagram. One herd grazed the bush area (20, 20A, 20B, 21, 21A, 21B). A second herd grazed the tame grass and one bush area (paddocks five through 11, 14 through 16, 19 and 22).

Cross-fences are single strand electrified high tensile wire with posts about 90' apart.

## Results:

In 1988 the section of bush grazed by 121 cow/calf pairs, while the 11 paddocks of tame grass carried 137 cow/calf pairs.

Drought hit the area hard. Starting on August 22, 10 lbs/head/day of screenings with an analysis of 10% protein and 64% energy were fed on pasture.

For 1989 drought conditions again prevailed. Cattle numbers were reduced and paddocks one through four were hayed, producing 26.5 bales.

| **Grazing Information:** | **TAME PASTURE** | |
|---|---|---|
| | **1988**** | **1989** |
| no. animals | 121 cows;121 calves | 78 cows;77 calves;15 heifers |
| acres | 480 | 640 |
| season | June 26 - Sept 26 | June 23 - Aug 11 |
| gain lbs/day | 0.64 ; 2.11 | 0.4 ; 2.74 ; 1.53 |
| production/ac | 64 lbs/ac | 32 lbs/ac |
| stocking rate | 0.78 AUM/ac | 0.5 AUM/ac |
| precipitation | 10.7 inches | 9.7 inches |

| | BUSH PASTURE | |
|---|---|---|
| | 1988** | 1989 |
| no. animals | 137 cows;137 calves | 72 cows;72 calves |
| acres | 640 | 800 |
| season | June 11 - Sept 26 | June 29 - Sept 11 |
| gain lbs/day | 0.37 ; 2.14 | 2.14 ; 1.24 |
| production/ac | 58 lbs/ac | 25 lbs/ac |
| stocking rate | 0.77 AUM/ac | 0.3 AUM/ac |
| precipitation | 10.7 inches | 9.7 inches |

** Starting on August 22, 1988, 10 lbs/head/day of screenings were fed on pasture due to drought conditions.

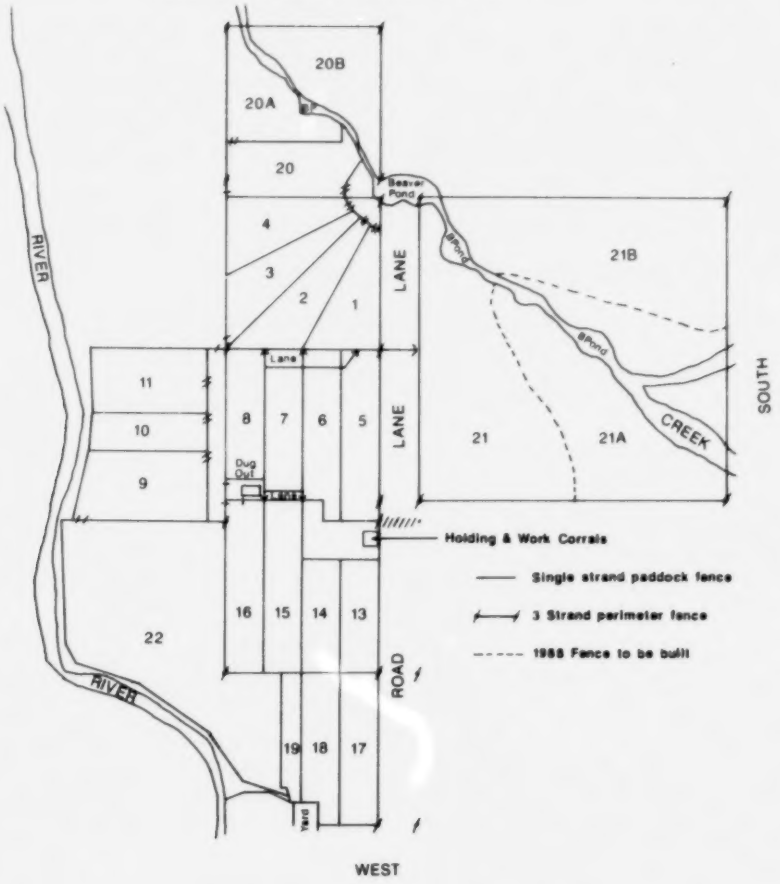
## Observations:

There is a greater time commitment needed to monitor rotational grazing.

Pumping water out of the dugout proved to provide a better supply of high quality water. Although it does require more time, it fits in well with filling salt boxes, checking cattle and monitoring grass.

The co-operator intends to continue with the grazing system and with modifications, to the pastures, he hopes to extend the grazing season.

**George Lidster's Grazing Cell**



# Carrot River Valley Rotational Grazing Project

Co-operator: WAYNE MEGLI
Box 607, CARROT RIVER, Sask.
S0E 0L0
Tel: 768-2991

Location: SE 10-50-10-W2

Soil: Carrot River fine sandy loam (wooded calcareous)

Objective: To efficiently graze livestock on a limited land base.

## History:

The project area contained 143 acres of previously cropped land divided into 13, 11 acre paddocks.

Starting in 1985, old quack grass has been worked up and replaced with various forage mixtures.

Seven paddocks were seeded to a mixture of meadow brome (5-6 lbs/ac), timothy (1.75 lbs/ac), crested wheatgrass 0.5 lbs/ac) and sainfoin (0.5 lbs/ac).

Three paddocks were seeded to a mixture of crested wheatgrass (4 lbs/ac), timothy (2 lbs/ac) and sainfoin (6 lbs/ac).

On May 21, 1988 the remaining three paddocks were seeded to winter wheat.

For the 1989 grazing season the producer left the quack grass in the three annual paddocks and drilled in a little winter wheat on May 29.

Perimeter fence is three and four strand barb wire. Cross fences are single strand electric fence. The poles are four foot rebar (with insulators) spaced every 120 feet.

## Fertilization:

1985 June 6 - 185 lbs product/ac of 34-0-0 on entire quarter

1986 May 30 - 125 lbs product/ac of 34-0-0, 0-0-60, 21-0-0-24 on entire quarter
Aug 22 - 117 lbs product/ac of 34-0-0 on #4,#7 and worst parts of #1
1987 May 12 & 13 - 154 lbs product/ac of 34-0-0, 0-0-60
In the fall, paddocks #1,#2,#3 received a heavy layer of cattle manure

1988 May 9 - 150 lbs product/ac of 34-0-0 on paddocks #4 to #10 as well as patches on #12 and #13
May 21 - 30 lbs product/ac of N-P&K on paddocks #1,#2,#3
through seed drill for winter wheat
Most of paddocks #6,#8,#11,#12,#13 had medium layer of hog manure applied during 1988
Pasture #9 had be given hog manure in the fall

1989 May 2 - 150 lbs product/ac of 34-0-0 on paddocks #5,#6,#7
May 30 - 150 lbs product/ac of 34-0-0 on most of remaining paddocks
Mid June - cattle manure on #4,#5

## Results:

Meadow bromegrass dominates the seven paddocks. On the other three paddocks timothy is doing well on the more peaty soils, while the amount of sainfoin present is minimal.

In 1985 only 40 acres were grazed by 99 heifers, eight cow/calf pairs and three bulls.

In 1986, 128 acres were grazed by 198 steers and six heifers. Grazing was supplemented with 23 large round bales.

In 1987 land was not grazed. Instead the producer harvested 350 tons of wet silage and 110 tons of hay.

In 1988, the cell was grazed by 120 mixed exotic and 27 british breed steers. Due to poor germination, in the 1988 season, three paddocks of winter wheat were grazed as one. From July 1 to August 17 the pasture was supplemented with 27, 1500 pound hay bales. Due to a shortage of grass, a neighbouring pasture was rented for 18 days from August 18 to September 4.

On May 19, 1989, 227 steers of mixed breed began grazing the system. Due to a shortage of grass, 55 head were shipped to a feedlot on June 16. A steer died on July 5 and two animals with health problems were sold on July 27.

The pasture was supplemented from June 2 to 12 with eight, 1200 hundred pound bales. Due to grass shortage, the neighbouring pasture was again rented and used from June 11 to June 25 and from Aug 11 until Aug 14. when the 147 steers were sold.

Until sold the animals were rotated a total of 45 times in 88 days.

Fifty-five tons of silage were harvested from paddocks #11,#12 and #13 in July.

| **Grazing Information:** | **1985** | **1986*** |
|---|---|---|
| animals | 99 heif;8 cow/calf;3 bull | 198 steer;6 heif |
| acres | 40 | 128 |
| season | June 5 - Sept 14 | June 5 - Sept 24 |
| gain (lbs/day) | 1.77 ; N/A ; N/A | 2.59 ; 1.46 |
| production (lbs/ac) | 443 ; 80.8 ; N/A | 476 |
| silage | ———— | 117.5 ton |
| precip. | N/A | N/A |

*NOTE: 23 large round bales fed free choice during 1986 along with pasture.

1987 No cattle grazed. Harvest 350 tons (wet) of silage from paddocks #4-#13, June 24-26, 1987. Harvested 110 tons (dry) of hay on #4-#13, September 1987.

| | **1988**** | **1989***** |
|---|---|---|
| animals | 120 steer ; 27 steer | 55 steer ; 152 steer |
| acres | 148 | 148 |
| season | May 20-Oct 19;May 24-Oct 12 | May 19-June 1;May 19-Aug 1 |
| gain (lbs/day) | 1.99 ; 1.66 | 2.46 ; 2.46 |
| production (lbs/ac) | 253 | 195 |
| silage | ———— | 55 ton |
| precip. | 9.25 inches | 5.5 inches |

**NOTE: Cattle out of pasture for 18 days, 21 hay bales weighing 1500 pounds fed while on pasture.
***NOTE: Cattle out of pasture for 19 days, 4.8 ton of supplemental hay fed while on pasture.

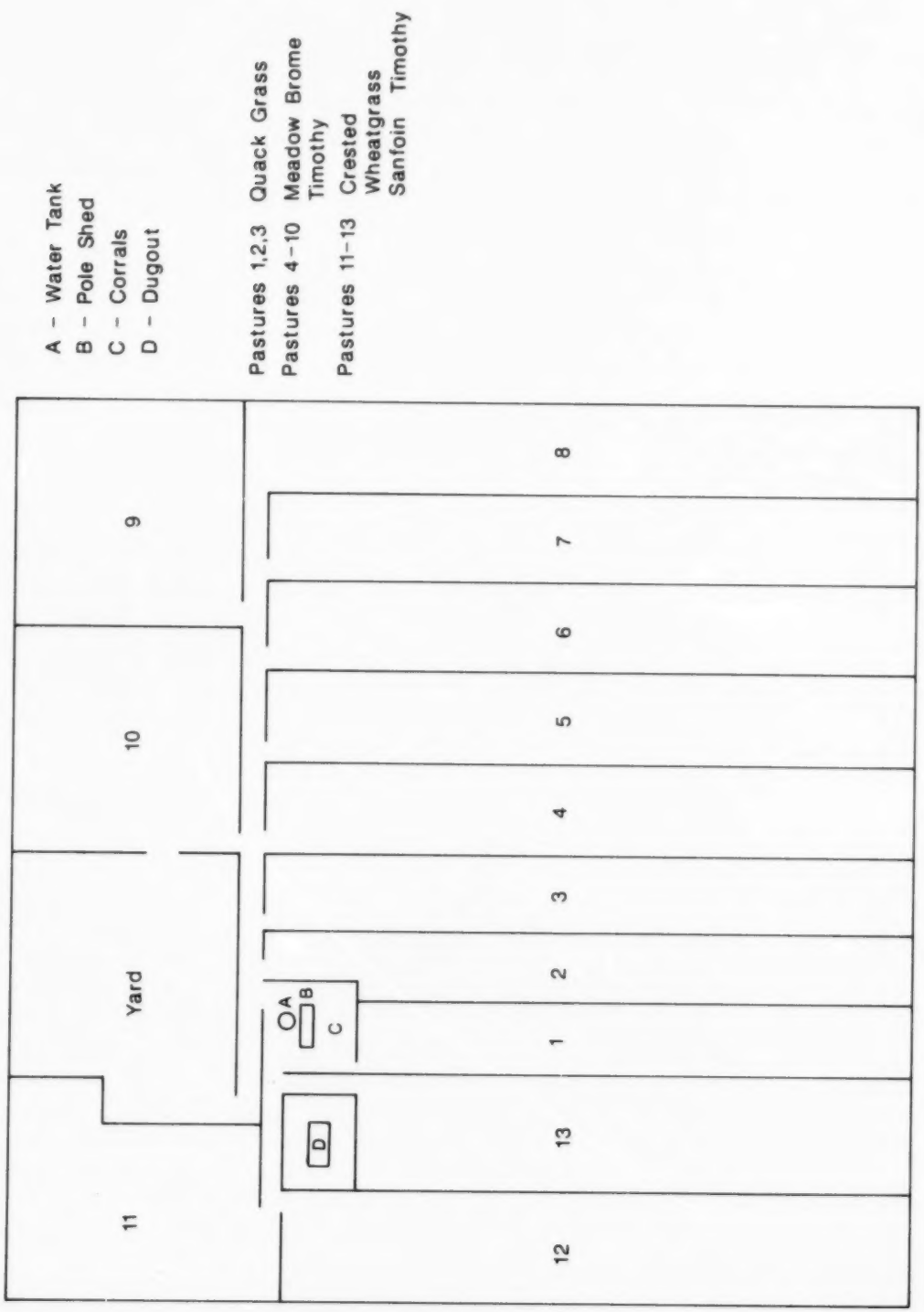
## Observations:

The producer felt that rotational grazing is a very good way of utilizing his land.

Using the land in this manner rather than for grain production seems to involve much less risk as far as flooding, drought, frost, hail and insects are concerned.

Some fence lines have been upgraded by replacing every other rebar with a wooden post, which makes a sturdier fence.

## Wayne Megli's Grazing Cell



# Whitebeech Pasture Project

Location: Whitebeech Community Pasture

Objective: To evaluate four means of controlling aspen regrowth and encroachment on pasture land. The four treatments include:

1. Herbicides
2. Controlled Burning
3. Forage Stand Rejuvenation
4. Controlled Livestock Grazing

## History:

All treatments were implemented with the exception of controlled burning. Unsuitable weather conditions prevented implementation and evaluation.

Monitoring of treatments by observation or field measurements where possible were conducted. Production utilization data and information on the effects of treatments on encroachment and regrowth were collected. However, limited resources made the implementation and monitoring of certain practices difficult.

## Steps taken:

**1. Herbicides.**

About 310 acres were sprayed on August 3, 1989 by aerial application. Spraying was conducted from between 4:30 p.m. and 7:00 p.m. under the following conditions:

| | |
|---|---|
| Air temperature | 17 degrees Celsius |
| Wind | Trace out of the southwest |
| Humidity | 60% (1.2 inches rainfall on evening of August 2) |
| Chemical Rate | 32 ounces ai per acre: 6 ounces adjunct plus 1/2 gallon diesel fuel per 100 gallons of mixture. Total volume sprayed averaged 3 gallons per acre. |
| Total Cost | $11.55 per acre |

Poplars and willows, the main targeted species, varied in height from five to 15 feet.

**Results:**

Within two and three weeks of spraying, willows showed leaf kill approaching 75% and poplars showed herbicide spotting. The sprayed areas will be evaluated further in 1990.

**Observations:**

Most publications recommend spraying for brush control in late May or early June. With spring growth and leaf expansion translocation rates within the plant are at a maximum. Spraying in August was conducted to determine if increased efficacy could be obtained through more herbicide being translocated to the root system during a later period of growth. Further monitoring will be required to make any conclusions.

**2. Controlled Burning.**

No controlled burns were conducted. Lack of sufficient fuel and late summer precipitation restricted the planned fall burning. Fireguards were worked down and maintained. The general consensus is that controlled burning is a cost effective means to modify aspen forest and improve grazing opportunities for livestock and wildlife.

Correct weather conditions dictate when a burn can be successfully conducted. This is therefore the major problem in using controlled burning. The fuel problem can be overcome by implementation of a rest-rotation grazing plan.

**3. Stand Rejuvenation.**

A previously cleared quarter was broke in the fall of 1987. Eighty acres on the west half were seeded to oats in the spring of 1988. The entire quarter was worked down in the fall. In the spring of 1989 a rangeland seeder was used to seed winter wheat.

A flush of mainly wild mustard and Canada thistle occurred later in the season and was grazed at a very low stocking rate with little impact on vegetation. The quarter was disced down in the fall.

A cross-fence was constructed during 1989. The entire quarter will be seeded to meadow brome and alfalfa in the spring of 1990 and a switchback grazing system will be implemented in 1991. Longevity of the stand and the rate of regrowth will be monitored along with forage productivity.

**Results:**

The winter wheat established poorly, attributed to an extremely shallow seeding depth, with a large percentage of seeds visible on the surface.

**Observations:**

Lack of rain following seeding and poor soil contact were likely the main factors responsible for poor winter wheat establishment.

Modifications to the rangeland seeder are recommended.

**4. Controlled Livestock Grazing.**

Section 15-35-31-W1 was cross-fenced in the spring of 1989 using single strand electric fence. Cross-fencing on section 22-35-31-W1 was completed in the fall of 1989. Minor construction (gates, etc.) is planned for 1990.

Livestock were rotationally grazed on Section 15 with the objective to improve the existing forage stand while controlling brush regrowth. Section 22 received continuous grazing as no cross-fencing was in place until the fall.

**Results:**

Stocking rates and densities, Sections 15 and 22-35-31-W1, Whitebeech Pasture.

| Field # | Area (acres) | Density (AU/ac) | Date In | Date Out | Duration (Months) | S. Rate (AUM/ac) |
|---|---|---|---|---|---|---|
| "U" | | | | | | |
| 1 | 160 | 2.76 | June 21 | June 28 | .23 | .63 |
| 2 | 160 | 2.76 | June 28 | July 5 | .27 | .74 |
| 3 | 160 | 2.76 | July 12 | July 20 | .27 | .74 |
| 4 | 160 | 2.76 | July 5 | July 12 | .23 | .63 |
| "R" | 620 | 0.71 | June 15 | June 21 | .20 | .14 |

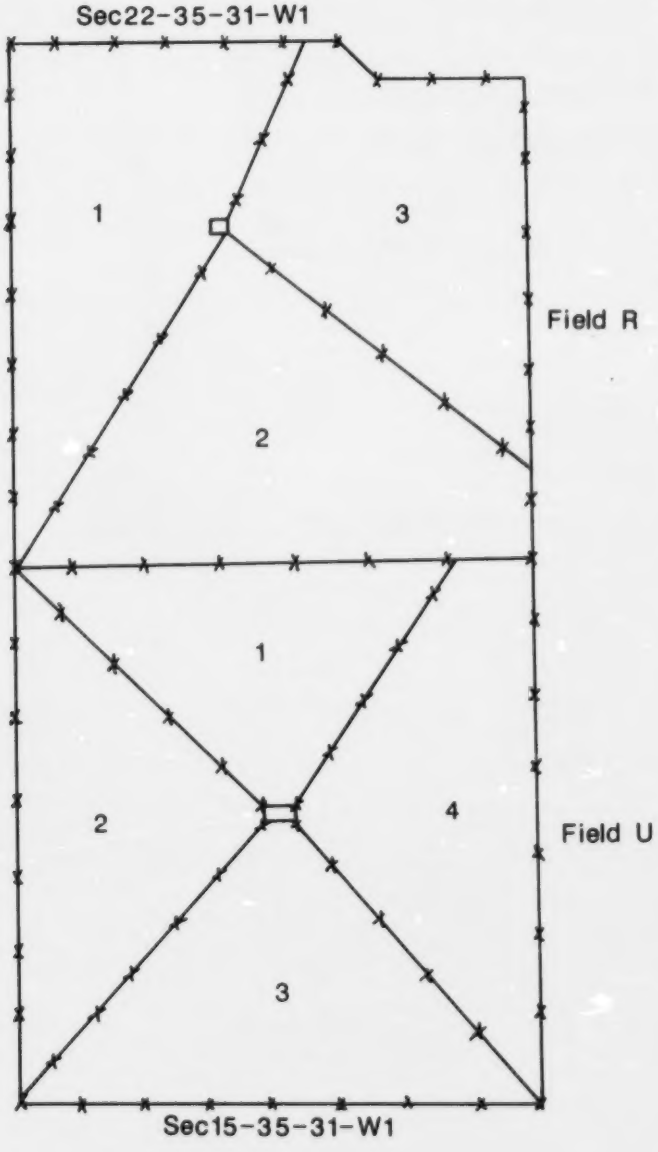
**Observations:**

The level of forage utilization was extremely high in fields U1 to U4 with carryover estimated to be about 10% of 1989 production. The impact of this level of utilization will be assessed in 1990 and subsequent years.

It is felt that repeated selective grazing on individual plants has been avoided but more carryover is required to maintain the nutrient cycle, a vigorous forage stand and to prevent winter kill.

The impact of livestock browsing on brush regrowth is not clear at this time. Woody species such as beaked hazelnut and buckbrush seem to be selectively browsed over popular and willow.

**Whitebeech Pasture Project's Grazing Cell**



## Northwest Region

# Blanchette Grazing Trials and Observations

Co-operator: MAURICE AND PAM BLANCHETTE
Box 59, VAWN, Sask.
S0M 2Z0
Tel: 397-2679

Location: SEC 20-47-19-W3

Soil: Meota fine sandy loam

Objective: To increase carrying capacity with a minimum amount of capital expenditure and input costs, while evaluating effects of time-controlled grazing on plants and animals.

## History:

In 1985, a grazing cell was developed on 223 acres. Cell evolved to include a total of 480 acres fenced into 18 paddocks of varying size.

Forage base includes 373 acres of tame pasture (Regar meadow brome and alfalfa), 107 acres of native bush and a minor amount of native grass. Seeded pasture was established gradually from 1985 to 1989.

Electric fence was used to cross-fence the cell, most of which is single strand high tensile wire. Fibre glass posts were used at 90 foot spacings on flat terrain. Paddocks were fenced according to vegetation type keeping native grass, tame grass and bush separate.

No fertilizer has been applied to project site to date.

## Results:

Since 1986, Blanchette has only grazed steers with the following results:

**Grazing Information:**

| | 1986 | 1987 | 1988 | 1989 |
|---|---|---|---|---|
| no. steers | 90 | 155 | 197 | 190 |
| acres grazed | 260 | 320 | 480 | 400 |
| season | May 12-Sept 9 | May 4-Sept 10 | May 5-Sept 11 | Apr 29-Aug 15 |
| gain lbs/day | 1.84 | 1.85 | 1.46 | 2.3 |
| production/ac | 95 lbs/ac | 125 lbs/ac | 85 lbs/ac | 116 lbs/ac |
| stocking rate 1.06 AUM/ac | 1.69 AUM/ac | 1.4 AUM/ac | 1.4 AUM/ac | |
| precipitation | N/A | 7.6 inches | 12.25 inches | 7.1 inches |

* over entire cell - average of all pasture types.
** 4 lbs grain fed daily with Bovatec from mid July on.
*** from April 1 to June 23, only 1.4 inches of rain.
**** no rain from July 16 to sale date.

Costs: electric fencing - total of $3034.00 to fence three quarters into 18 paddocks.

## Observations:

The Blanchette's are pleased with performance of both cattle and pasture.

Grazing rotations need to be tailored to grass growth - fast rotation during periods of fast growth, slow rotation in periods of slower plant growth. Days on each paddock varied from one day to 10 days depending on size of paddock, growth rate of grass and goals for paddock. Paddocks received from nine to 68 days of rest.

Rotations were flexible and did not follow numerical paddock numbers. Animals were moved to which ever paddock was ready to be grazed.

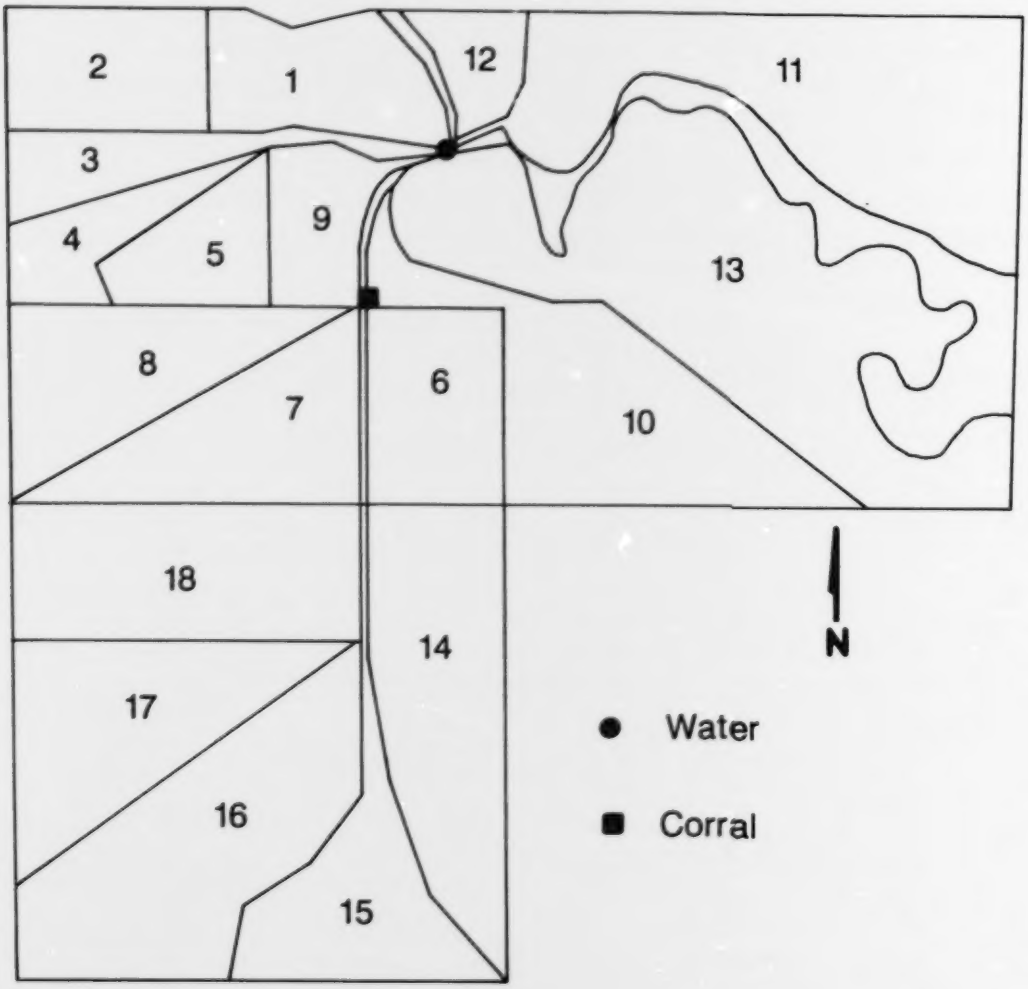
During the grazing season it appears best to leave at least four inches of stubble on a paddock for regrowth. Going into winter, paddocks should be left with four to six inches of stubble.

Increase of stocking rates should take place gradually as management and forage growth permit.

The system allows for planning, with the producer always aware of exactly how much forage is available. Monitoring regrowth allows the producer to plan accordingly.

Accurate and complete records detailing animal numbers, days on paddocks, rotation dates, sequence, gains, and precipitation are a definite advantage.

**Maurice and Pam Blanchette's Grazing Cell**



# Glanusk Farms Intensive Pasture Management

Co-operator: LLOYD & ERNIE HOW
Box 189, CUT KNIFE, Sask.
S0M 0N0
Tel: 398-2936
Location: SEC 16-45-22-W3

Soil: Oxbow loam and Blaine Lake loam

Objective: To increase cattle numbers while maintaining healthy range condition, controlling brush and making efficient use of available forage.

## History:

The Hows developed their grazing system in 1985 on land previously continuously grazed. Part of the aspen-parkland vegetation belt, the forage base consisted of 118 acres of aspen groves with understorey species; 203 acres open native grasslands with low areas dominated by kentucky bluegrass and a 20 acre field seeded to annuals. The overall pasture condition was fair except for a problem with snowberry encroachment on the grasslands.

The pasture was divided into 12 paddocks using electric fence. When possible, paddocks were designed to contain only one vegetation type. Bush was fenced separate from grasslands and hillsides were fenced separate from low areas.

Alleyways were built to lead animals to alternate water sources as dugouts dried up.

Two wires were used for cross fences - one hot, one grounded. Spacing of wooden posts and fibreglass rods varied with terrain. There is approximately 3.1 miles of cross fence.

## Results:

The spring of 1988 was dry, with only three inches of rain until the end of June. By July 1 the 163 head of cows and heifers were consolidated into one herd to allow for greater flexibility in the rotation.

Animals were rotated among pastures, staying one to four days, depending on condition of the paddock, size and available forage. The 20 acres seeded to oats gave 11 days of grazing. Animals had access to this field for two days followed by two weeks of rest. Thirty five acres of crop was also fenced off for additional grazing and 140 acres of native grass was grazed from Sept 2 to Sept 19. Rains came in August and the pasture went into winter in good shape with good carryover.

Initially in the spring of 1989, 50 cows and calves started grazing the cell on May 14. On June 28, bulls were pulled and three herds consisting of 81 one cows, 83 calves and 26 heifers were again consolidated. The 20 acres in paddock #3 were seeded to oats along with 10 lbs of sweet clover. The clover did not perform well due to too much competition for the available moisture.

**Grazing Information:**

| | **1987** | **1988** |
|---|---|---|
| no. animals | 57 cows;57 calves | 63 cows;63 calves;35 heifers |
| acres | 341 | 513 |
| season | May 1 - Oct 16 | May 14 - Sept 19 |
| gain lbs/day | 0.96 ; 2.36 | 1.24 ; 2.7 ; 0.94 |
| production/ac | 85 lbs/ac | 71 lbs/ac |
| stocking rate | 0.9 AUM/ac | 1.1 AUM/ac |
| precipitation | 11.4 inches | 13.7 inches |

**1989**

| | |
|---|---|
| no. animals | 50 cow/calf & 2 bulls ; 81 cow/calf & 26 heifers |
| acres | 341 |
| season | May 22 - June 28 ; June 28 - Aug 31 |
| gain lbs/day | 0.6 cows ; 2.55 calves ; 0.82 heifers |
| production/ac | 68 lbs/ac |
| stocking rate | 1.05 AUM/ac |
| precipitation | 11.8 inches |

NOTE: PRODUCTION FIGURES (LBS/AC) ARE BEST ESTIMATES ONLY SINCE CATTLE WERE OUT OF THE CELL FOR PERIODS OF TIME BUT WERE ONLY WEIGHED BEGINNING AND END OF GRAZING SEASON.

## Observations:

The Hows are pleased with results and intend to develop another grazing cell.

There is no doubt in Lloyd How's mind that the grazing system helped them through the drought of 1988.

Electric fence is working fine.

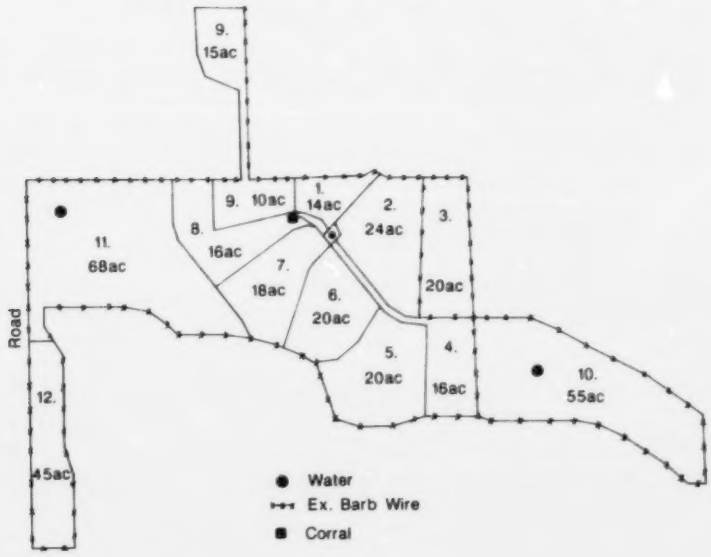
Water sites have to be protected, hence the solar pumping system to bring water from dugout into troughs. After some trial and error, a C.A.P. solar pumping system for the central dugout is working well. The producer plans to add a storage tank which should address concerns of water shortages.

The bush has become a forage resource using the grazing system. Brush control is slow but favourable.

Ease of animal handling, reduced stress, the ability to monitor herd health closely and the ability to plan are considered big benefits of the system. Hows recommend that people considering using this system start small and build into a larger unit. This allows time for herd increases, understanding, fence layout and a softening towards information that sounds exciting.

Tent caterpillars over the past several years have opened the bush and killed tall trees creating a barrier to grazing. Grazing was lost during 1989 due to the heavy cocooning in the bush areas.

**Lloyd and Ernie How's Grazing Cell**



# JSP Simmental Intensive Pasture and Hay Management

Co-operator: J. STANLEY PALMER
Box 219, MARSDEN, Sask.
S0M 1P0
Tel: 826-5544

Location: NE 9-44-27

Soil: dune sand to Meota fine sandy loam

Objective: To maximize stocking rate through efficient use of hayland.

## History:

On August 23, 1982, 120 acres on a quarter of former cropland were seeded to permanent forage. Forage consisted of 4 lbs/ac crested wheatgrass and 0.5 lbs/ac alfalfa. This was mixed with 40 lbs of 11-51-0 and fed through a press drill.

In 1983 the grass was left to establish, hayed in 1984, 1985, 1986, and 1987. No further fertilizer was applied.

In 1984 the remaining 40 acres were seeded with 5 lbs/ac crested wheatgrass, 1 lb/ac alfalfa and 1 lb/ac Altai wild rye. The seed was mixed with 25 lbs of 11-51-0. The stand was left to establish during 1985 and 1986 then hayed in 1987.

In 1988 the quarter was divided into four, 40 acre paddocks. Paddock #1 was fertilized with 200 pounds of 46-0-0 and Paddock #2 was fertilized with 100 pounds of 46-0-0.

Two more 40 acre paddocks were added in 1989 to increase the land base to 240 acres. These paddocks were combinations of crested wheatgrass/alfalfa, oats and fall rye seeded in early June.

Electric fencing was used to divide the quarter into paddocks. Cross-fences consisted of two wires strung on treated wood posts. Insulators were used on all posts. The top wire was the ground, the bottom wire hot. Proper grounding was achieved through the use of three ground rods. During 1989 a second solar panel was added to keep the battery fully charged.

## Results:

In 1988, to keep the crested wheatgrass from heading, 80 acres were hayed the first part of June. The harvest produced 100 round bales. The stubble left at a height of six to seven inches was allowed time to regrow.

Grazing began July 20, 1988 with 42 Simmental cow/calf pairs with an average cow weight of 1400 pounds and 23 Simmental heifers. Cattle were rotated every 10 to 16 days until October 7 when they were weighed. A stubble of five to six inches was left after each grazing. Cows gained 0.75 lbs/day, calves gained 2.3 lbs/day. No weights were kept for heifers.

The 1989 grazing season began July 3, when 58 Simmental cow/calf pairs, 22 Simmental yearling heifers and 13 Saler X Simmental heifers were put on the project. Cattle were rotated every five to seven days.

The cell suffered heat and moisture stress during the summer. On August 25, 21 cows, six calves and seven heifers were removed form the cell. On September 25, the remaining calves were weaned and removed. The cows and heifers were then put on 80 acres of additional annual crop previously harvested as green feed. They remained there until October 8. Calves gained 2.18 lbs/day from July 3 to Sept 25. Precipitation totalled 13.3 inches.

Costs: electric cross fencing - $500.00 per mile.
solar panel, battery, fencer, ground rods, housing for fencer and misc - $563.00 for whole project.

## Observations:

The cell has worked well for Palmer.

It's important to guard against over utilization as over time neglect or over-grazing can lead to decreased carrying capacities.

Paddocks are easily rested or hayed for a year to benefit grass growth.

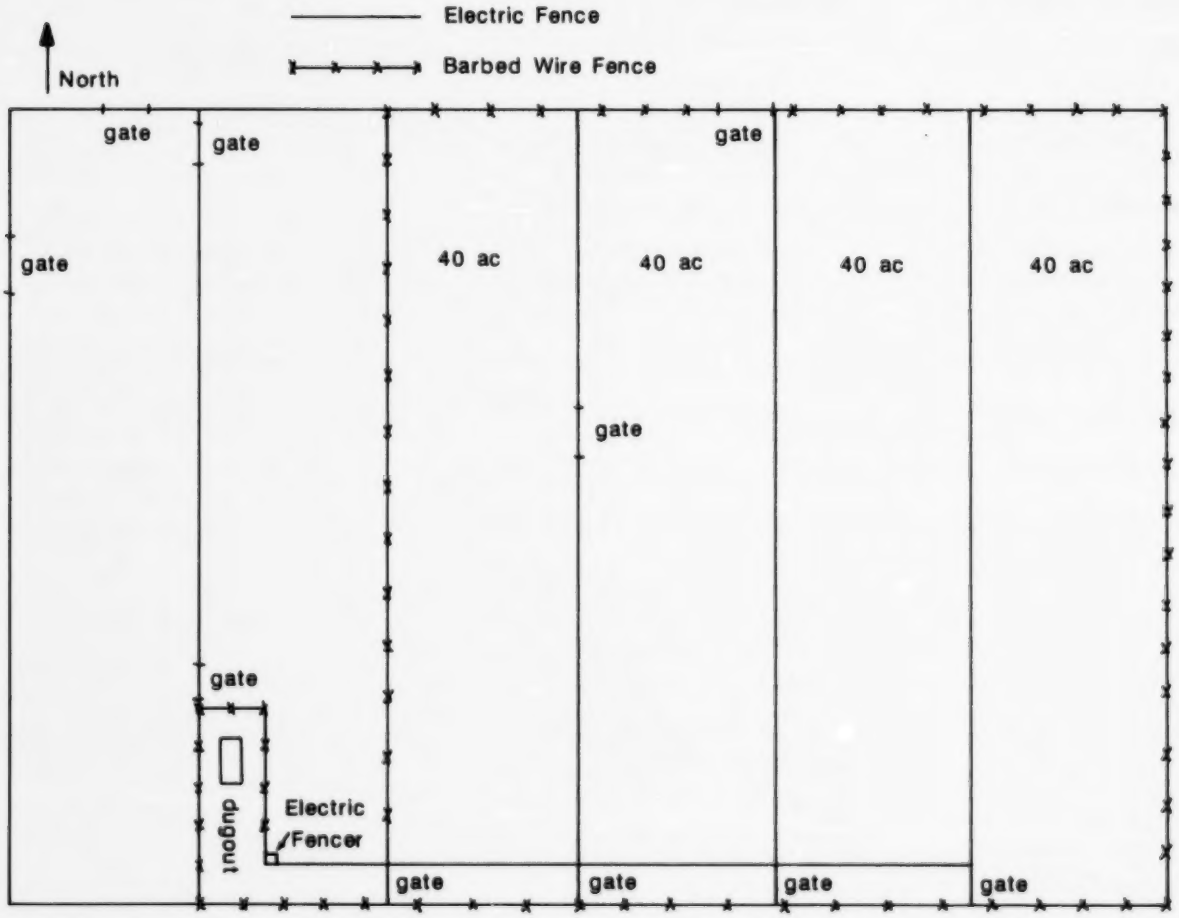
Different types of forages in the system would help even out the forage supply.

Electric fencing works.

It is evident that the cattle are polluting the water. In an attempt to alleviate this problem the dugout will be fenced off and cattle will either be allowed access to one end or water will be pumped out.

It was felt that a certain amount of fertilizer was lost due to hot dry weather.

**J. Stanley Palmer's Grazing Cell**



# Forage and Grazing Trial - Canwood

Co-operator: ED STRELAU
Box 145, CANWOOD, Sask.
S0J 0K0
Tel: 468-2820

Location: NE/SW 2-50-5-W3

Soil: Whitesand sandy loam, small amount of Blaine Lake black loam

Objective: To evaluate the viability and longevity of certain forage species under grazing.

## History:

After a spring cultivation operation, a floater truck was used to fertilize and broadcast seed six forage species onto light, unproductive soils. The fertilizer, a blend of nitrogen, phosphorus, potassium and sulphur, was applied at a rate of 150 pounds per acre.

Seeding was done in mid-June 1988, just after a two inch rain, at the following rates and mixtures:

1. meadow brome (7 lbs/ac) and cicer milkvetch (2 lbs/ac)
2. smooth brome (7 lbs/ac) and alfalfa (2 lbs/ac)
3. perennial ryegrass (5 to 6 lbs/ac) and alfalfa (2 lbs/ac)
4. crested wheatgrass (5 to 6 lbs/ac) and alfalfa (2 lbs/ac)

The alfalfa and cicer milkvetch seed were inoculated before seeding. Spring rye was seeded at about 6 pounds/ac as a cover crop to protect the area from erosion. The cover crop was swathed for silage in mid-August.

The area was cross-fenced using electric fencing.

## Results:

The perennial rye grass completely winter-killed during 1988/1989. The cicer milkvetch has germinated, grazing management will determine whether it persists or not. Grasses and alfalfa had good establishment.

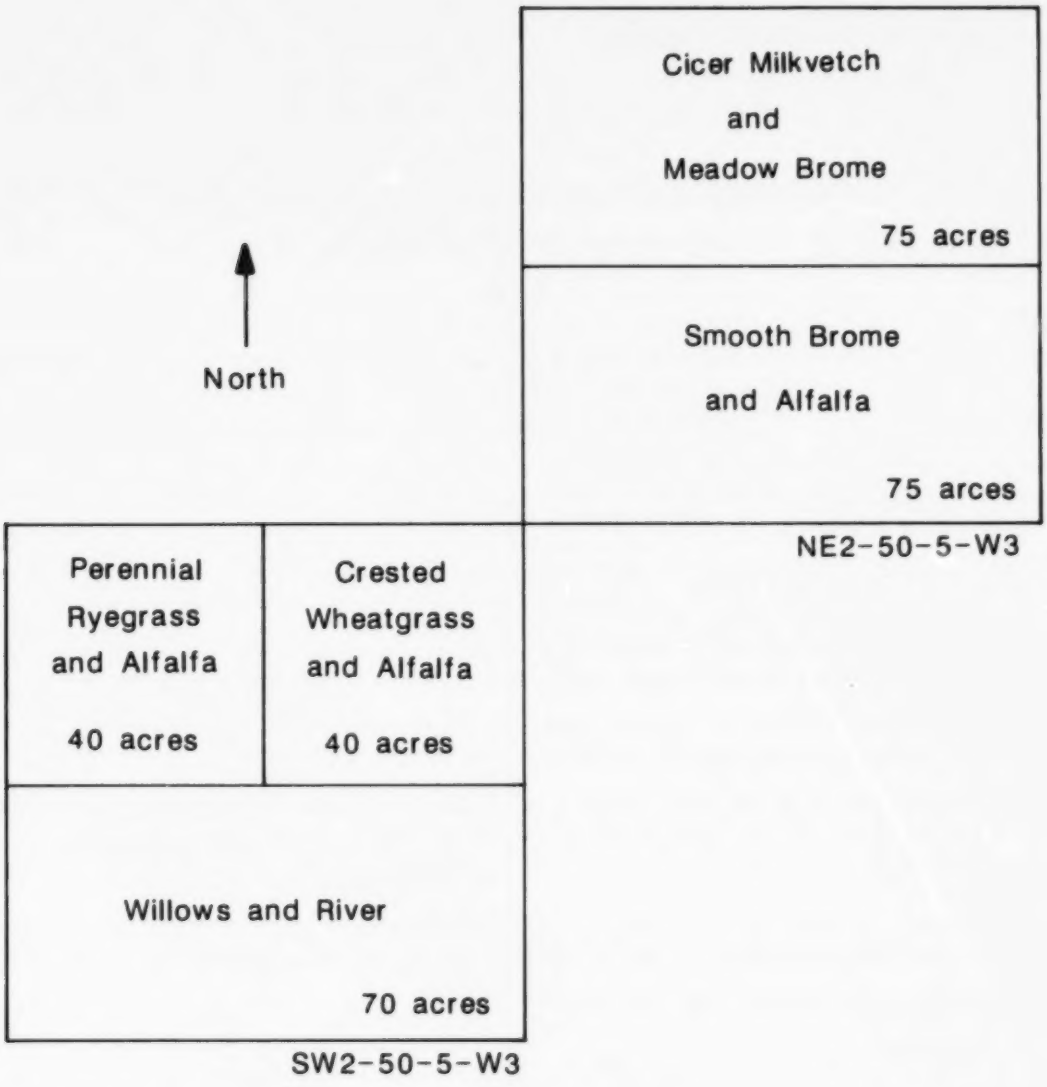
Cattle were placed on pasture May 15, 1989. Number of animals and weight data not available.

## Observations:

Only further use and monitoring will determine long term production from the different forages seeded.

Fall carry-over could have been higher to protect against winter kill and give a good start for next year.

**Ed Strelau's Grazing Cell**



# Complementary Grazing Trial - Meadow Lake

Co-operator CORY WILSON
Box 147, MEADOW LAKE, Sask
S0M 1V0
Tel 236-5965

Location NW 8-59-17

Soil Meadow bog complex & Meadow Lake clay loam

Objective To use native and tame pasture in a complementary system

## History:

This 360 acre forage base consists of 160 acres native bush, with the balance a combination of alfalfa/brome, small areas of meadow foxtail, creeping red fescue, reed canary grass and swathed annuals used for fall grazing.

Perimeter fence is four strand barbed wire, while all cross fences are single strand 12.5 gauge high tensile smooth wire. Insulators are used on all posts spaced at 60 to 100 feet intervals. A rechargeable battery operates the fencer.

During 1988 an old stand of brome and alfalfa was converted to oats/fall rye/sweet clover pasture. An additional 40 acres of oats and triticale underseeded to winter wheat was used for fall grazing.

For 1989, further cross fencing was added to create a total of eight paddocks. Animals went into the bush pasture May 26 and were rotated from bush pasture to tame grass every 24 to 35 days.

In the six tame grass paddocks cattle were moved every two to seven days. On September 12 animals were put on the swathed annual pasture and were weighed off October 11.

Good stubble height was left in all paddocks after each grazing period and at the end of the season.

## Results:

Due to off farm circumstances a normal rotation was not followed in 1988. It was observed that the animals seemed to rotate themselves between the bush and tame pasture on a weekly basis.

Harvesting the tame pasture produced 1.75 tonne/ac of hay.

**Grazing Information:**

| | 1988 | 1989 |
|---|---|---|
| animals | 50 cows;50 calves;19 heifers | 60 cows;60 calves;10 heif. |
| acres | 160 bush;160 tame | 160 bush;125 tame;35 annual |
| season | June 6-Oct 16 | May 26 - Oct 11 |
| gain lbs/day | 0.35; 1.93; N/A | 0.75; 2.35; N/A |
| production/ac * | 42 lbs/ac | 79 lbs/ac |
| stocking rate ** 1.07 AUM/ac | 1.05 AUM/ac | |
| precipitation | 17 inches | N/A |

* does not take into account heifers
** does not take into account heifers

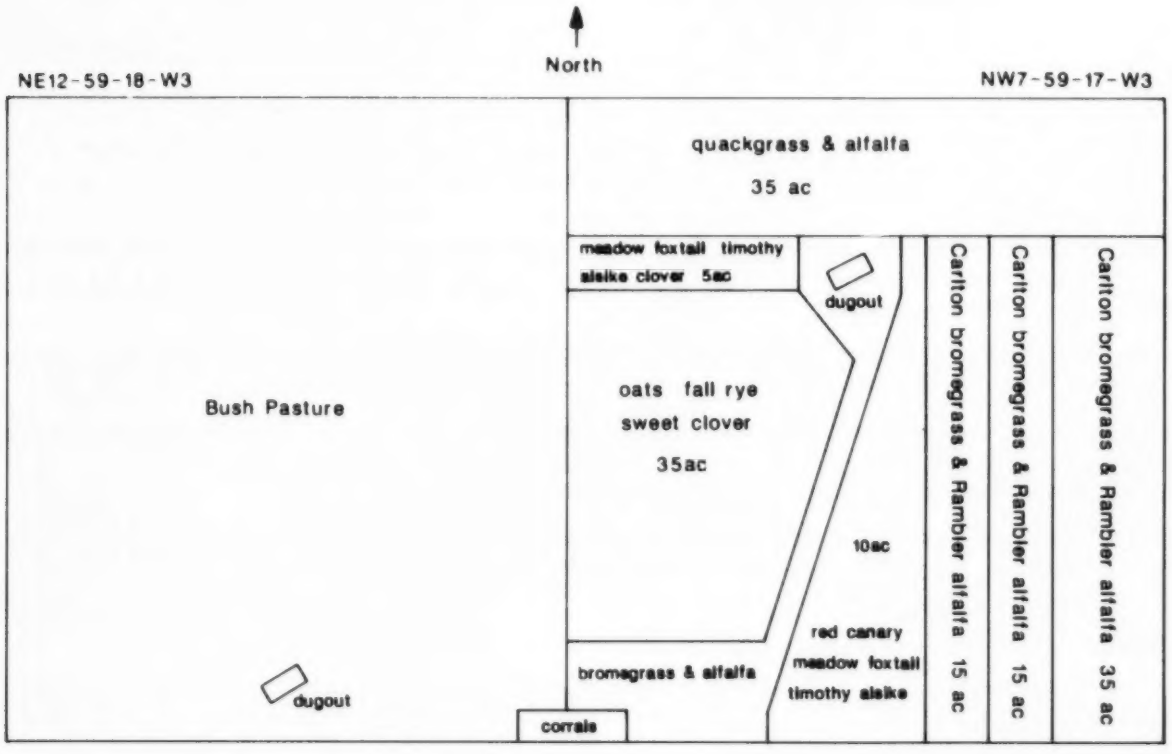
## Observations:

The co-operator felt that rotational grazing allowed him to increase stocking rates by 30% over continuous grazing.

In 1988, the triticale did not produce as expected and the winter wheat experienced some winter kill. The co-operator therefore switched back to oats and fall rye for annual pasture.

No problems with electric fence.

**Cory Wilson's Grazing Cell**



# Complementary Grazing Trial

Co-operator: GARY & LAMBERT WOURMS
Box 310, ST. WALBURG, Sask.
S0M 2T0
Tel: 248-3796

Location: SEC 29-54-23-W3

Soil: Waitville loam to light loam, rocky, heavily degraded

Objective: Lengthen the grazing season and increase stocking rates while alleviating over-utilization of improved pastures and making more efficient use of available native bush.

## History:

In the past, one section consisting of 220 acres of improved pasture land and the balance native bush was stocked with 65 to 70 cow/calf pairs. The grazing season lasted from about May 20 to late September or early October. Native bush was grazed lightly, while the improved pasture received continuous use and became unproductive.

In the summer of 1986, 108 acres of improved pasture were re-broke, worked down and 73 acres were sown to fall rye. It was not grazed until the following season. The remaining 35 acres were sown to oats in the spring of 1987 and harvested as grain that fall.

Single strand electric fence was used to separate native bush from the tame pasture. Fibreglass rods at 50' spacings were used to hold the wire with power supplied by a 12 volt fencer using one solar panel.

Pasture renovation was completed in the spring of 1988. The 35 acres of oats stubble were worked with a double disc, fertilized (111 lbs/ac 46-0-0, and 34 lbs/ac 11-51-0), broadcast seeded (50 lbs/ac oats, 5 lbs/ac crested wheatgrass, 2 lbs/ac alfalfa), harrowed and packed.

In July 27, 1988, the 73 acre field was broadcast seeded (1 bu/ac oats, 3 lbs/ac meadow brome, 1 lb/ac smooth brome, 1.6 lb/ac alfalfa, 1.6 lb/ac birdsfoot trefoil), harrowed and packed.

## Results:

The cover crop was cut on July 29 yielding 47 large round bales. The regrowth was grazed for 10 days in late September.

The cover crop was grazed for eight days in late Sept/early Oct. Establishment was not as good as on the early seeded 35 acres.

During 1988, 71 cows and 68 calves were rotated from the old tame pasture to the bush then on to the cover crops. Length of grazing season was 121 days. The old improved pasture was not grazed as heavily as in other years and went into winter in better shape.

During 1989, 71 cows and 70 calves grazed the same acres. Animals were rotated between the four fields for a total of 132 days of grazing. The newly seeded pastures were not heavily utilized so that they could become better established.

**Grazing Information:**

| | 1988 | 1989 |
|---|---|---|
| no. animals | 71 cows;68 calves | 71 cows;70 calves |
| acres | 640 | |
| season | June 7-Oct 7 | May 27-Oct 7 |
| gain lbs/day | 1.25 ; N/A | 1.34 ; 2.39 |
| production/ac | N/A | 54 lbs/ac |
| stocking rate | bush: 0.35 AUM/ac | bush: 0.23 AUM/ac |
| seeded: 1.2 AUM/ac | seeded: 1.4 AUM/ac * | |
| precipitation | N/A | N/A |

## Observations:

Animal distribution is much improved.

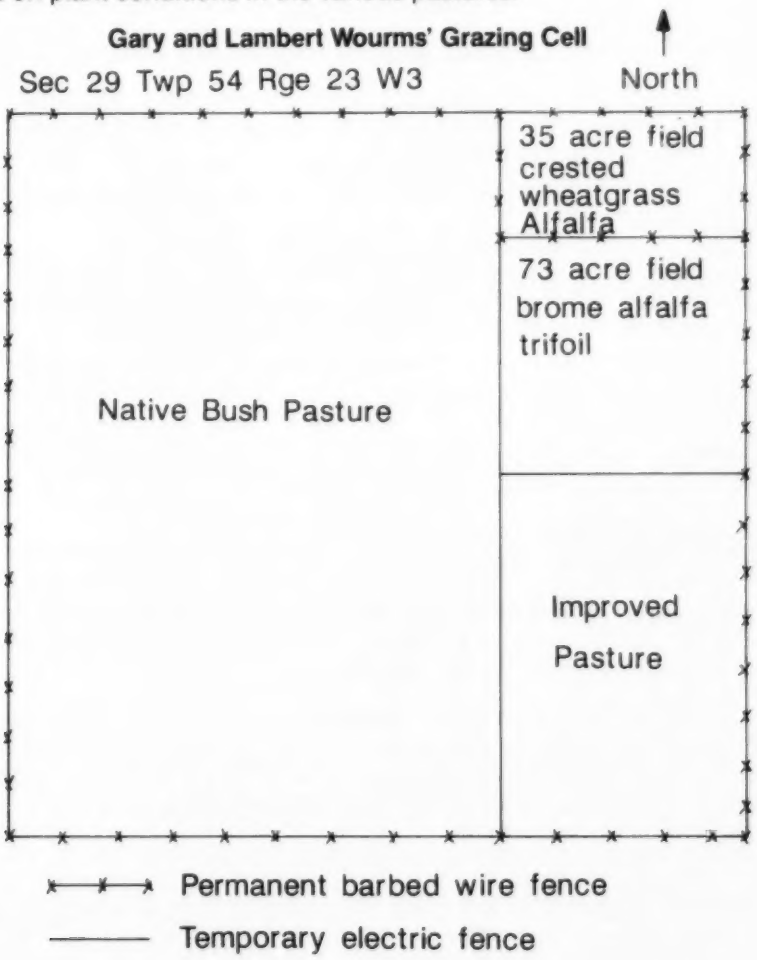
Bush is being better utilized and tame pasture is being given a rest period.

Electric fence is working fine.

The crested wheatgrass should provide early spring grazing from now on.

Rotations will be based on plant conditions in the various pastures.

**Gary and Lambert Wourms' Grazing Cell**



# Other New Pasture and Grazing Technologies Project Demonstration Sites

| Name | Address | Project |
|---|---|---|
| Oran Balas | Ponteix | Renovating crested wheatgrass |
| Ray Gerard | Claydon | Clubmoss control |
| Cam Gingrich | Simpson | Complementary grazing |
| Howard Isaac | Delisle | Time-controlled grazing |
| Lee Johnston | Welwyn | Grazing annuals |
| Murray Jones | Kindersley | Time-controlled grazing |
| Robert Kohlman | Lloydminster | Parkland grazing |
| Milt Odell | Success | Grazing downy brome |
| Don Peacock | Frontier | Control of silver sage |
| Paul Perrault | Ponteix | Control of silver sage |
| Don Sinclair | Limerick | Intensive grazing |
| Greg Targerson | Swift Current | Intensive grazing |
| Vic Wickstrom | Tompkins | Grazing annuals |
| Les Wotherspoon | Swift Current | Grazing kochia |

## Research Projects

NPGTP funded two studies at Pathlow pasture. One study focused on parasites in calves grazed on a HILF grazing system. The second study looked at longterm changes in species composition on pastures grazed by HILF as compared to other systems.

**Gastrointestinal Nematode Parasites in Saskatchewan Cattle:**

Experimental Epidemiology in Beef Calves on Continuous Grazing, Slow Rotation and Savory Quick Rotation Systems.

Lydden Polley, Western College of Veterinary Medicine
Duane McCartney, Agriculture Canada - Melfort

The study investigated the epidemiology of gastrointestinal nematode parasites (gutworms) in Saskatchewan beef calves grazed with their dams utilizing, three different grazing systems: continuous, slow rotation and quick rotation using Savory grazing management.

Stocking densities on all systems were similar. The herd used was that at the CDA Research Station in Melfort. Changes in parasite prevalence (the proportion of a population infected with gutworms) and intensity (the average gutworm burden per individual animal) were assessed by measuring changes in the numbers of parasite eggs in samples of the calves' faeces collected at regular intervals throughout the 1988 and 1989 summer grazing seasons.

Regardless of the grazing system used or of the year (1988 was very dry), all groups of calves first acquired gutworms in mid June to mid July. Also, all groups showed similar peak prevalences (55 to 75%) and intensities (mean faecal egg counts of 5.0 to 17.0 e.p.g.) during September.

This synchrony in infection pattern among the calves is partly due to the timing of cattle movements within the rotational systems; for example, while early in the season a few calves acquired gutworms during their first visit to a particular rotation paddock, most parasites were acquired once the calves began to visit paddocks a second time. Further analysis of these results is under way.

The major conclusion of the study to date is that under climatic and grazing conditions prevailing in east-central Saskatchewan in 1988 and 1989, neither slow nor quick rotation changed the pattern of acquisition of gutworm infection from that observed in calves grazed continuously on the same pasture throughout the summer.

**Plant Survey of Pathlow Pasture**

Duane McCartney, Agriculture Canada, Melfort

The Pathlow Community pasture is composed of soils belonging to the Waitville association (gray wooded) was used.

Using compass bearings and distance measurements historical sampling sites were located. A point quadrat frame consisting of 18 steel pins at 2" centres is pushed vertically into the vegetation so that the steel pins move towards the ground. A record is them made of the plants that are hit or touched by the pins at ground level.

The ground is said to be bare where a pin point fails to touch a plant. The frame is placed and read 10 times at each site. Ten sites are randomly located using computer-generated distance and compass bearings within each study area. This information was then compared to historical data collected from these same sites.

When the ecological survey of the portion of Pathlow Community Pasture used by Melfort Research Station was started in 1975, the main plant components were creeping red fescue (53%), smooth brome (14%), and dandelions (22%). In 1989, the main plant components are Kentucky bluegrass (39%) and smooth brome (24%). This change was a result of fertilization, breaking the old sward in some paddocks and seeding to the additional forages of meadow brome, crested wheatgrass, and Russian wildrye, or reseeding them to smooth brome and alfalfa,

Crested wheatgrass and meadow brome are major components of the paddocks in which they were seeded (41% and 26% respectively), but Kentucky bluegrass has invaded both stands to a major degree, forming 34% and 26% of the vegetation in the two swards. Russian wildrye did not establish well and has become a less important component over time. It now makes up only 4% of the species present in the paddocks in which it was seeded. The major components in those paddocks are Kentucky bluegrass (52%) and smooth brome (18%). Reseeding paddocks to a mixture of alfalfa and smooth brome has raised the alfalfa content to only 2%. Bromegrass makes up 33%, and Kentucky bluegrass 37% of the species content of these paddocks.

There were no major differences in species proportions between 1988 and 1989. Kentucky bluegrass continued to increase slightly. The major difference between the two years was in the overall plant basal area. This measured only 15% in 1988, and demonstrates the rapid changes that pasture species make in response to changes in water status.

**Using Satellite Information as a Tool for Range Management**

Jeff Whiting and John Polson, SRC Saskatoon

Duane McCartney, Agriculture Canada, Melfort

Saskatchewan Research Council (SRC) is assessing the potential to use satellite imagery in range management. A method was developed for monitoring grazing conditions in Saskatchewan using a composite of daily NOAA satellite data.

Biomass levels are estimated for all areas of the province and compared as a per centage of the previous year's maximum forage biomass estimate. Composite weekly biomass maps are created from the NOAA satellite data indicating when each area of the province is suitable for the onset of spring grazing. A similar map is created to show the theoretical end of the grazing season.

The maps were visually compared to actual length of grazing season for all PFRA pastures in Saskatchewan. The provincial map for the onset of the grazing season, created from satellite data, was very similar to what actually happened at the beginning of the grazing season. Discrepancies were found between the actual and estimated final data of the grazing season.

This process, using NOAA Satellite data can be used to monitor range readiness on a provincial basis. However more consistent grazing and forage yield data is required in order to verify and refine the procedure.

**University of Saskatchewan**

Dr. Jim Romo of the University of Saskatchewan is comparing short-duration, four pasture and continuous grazing systems near Saskatoon and Mortlach. Information from these studies will help to identify which method of grazing is best suited to certain Saskatchewan conditions.

**A Practical Guide to Rangeland Planning**

Saskatchewan Research Council, Saskatoon

Zoheir Abouguendia of the SRC is developing a Guide to Rangeland Planning which will be of practical value to producers and professionals alike.

**An Assessment Procedure for Saskatchewan Rangeland**

Saskatchewan Research Council, Saskatoon

New Pastures and Grazing Technologies Project provided first year funding for a longterm study to identify Saskatchewan range sites and determine their longterm carrying capacities.

To date, Saskatchewan has relied heavily on data from Alberta, Montana and North Dakota in determining range potential. While detailed information is available for some Saskatchewan range sites in the brown and dark brown soil zones it is lacking elsewhere. A made in Saskatchewan range site guide will be the final product.